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Twice Round the Clock on the Open Road

BY W. F. BRADLEY

SEVEN silver cups are needed in New Jersey. Those entitled to them are: J. B. Ryall (Matheson), R. G. Kelsey (Haynes), Ralph Owen (Oldsmobile), R. A. Green (Locomobile), A. T. Purcell (Ford), S. D. Atkinson (Franklin), and Montague Roberts (Thomas Flyer), all of whom finished the twenty-four hour endurance run organized by the New Jersey Automobile and Motor Club without a single lost point. Seven others completed the day-

and-night run, but failed to meet all the requirements of the competition, and the same number were obliged to abandon the contest at different stages through accident or weakness.

Promptly at 2 o'clock, Friday, November 15, Mayor Hurling, of Newark, fired the starting pistol, and J. B. Ryall, with a 1908 Matheson, so recently out of the factory that its paint work had not been completed, responded by going over the line with a full load of passengers. R. G. Kelsey followed one minute later on a four-seater Haynes runabout, racy-looking with its short exhaust pipes projecting through the bonnet, and its monster gasoline tank in the rear. Ralph Owen piloted No. 3 Oldsmobile, and J. P. Hopson took charge of No. 4 Olds "Mudlark" of Florida fame. Three Maxwells, piloted respectively by Dan McCormick, D. Nichols, and Charles Fleming, went away as the word was given, and were followed by Mrs. M. H. Rickey, the only lady driver in the contest, on an air-cooled Marmon car. L. H. Roberts, who succeeded, had the same make of machine with water-cooled engine. R. A. Greene piloted his own Locomobile, a 20-horsepower 1908 model, with yet very few miles to its credit, judging from the spotless condition of its paint and brass work. P. H. Johnston took the Grout touring car No. 11, and Mazzaro, Chilver, and Smith each steered a Mitchell.

The only "six" in the competition was a long-bonneted Ford runabout piloted by A. T. Purcell. F. P. Gillette was responsible for the safety of the 1908 Pullman, just shipped from the



COURSE WAS VARIED, INCLUDING LONG CLIMBS, AS WELL AS LEVEL STRETCHES.

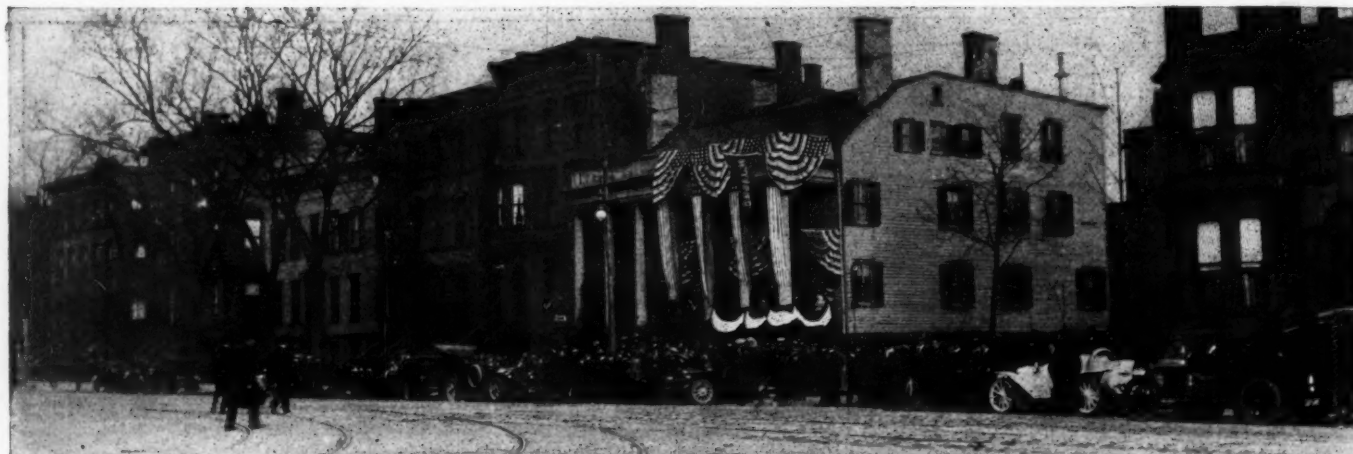
York factory. In strong contrast with its competitors was Dr. J. Finley Bell's little Hewitt runabout, which was certainly not a 1908 model. Franklin supplied the second air-cooled car, with S. D. Atkinson at the wheel; Cadillac was represented by a single and a four-cylinder model, the latter a 1908 production with runabout body, handled by I. M. Uppercue. C. E. Fisher responded with a new Autocar, and Montague Roberts, equipped with a football helmet which

many a competitor would have gladly borrowed during the night, closed the procession on a 1908 Thomas Flyer touring car.

There was a generous and hearty response to the committee's request for cars to aid in the work of organization, the Calvert-Zusi Auto Company lending a 1908 Six-Teen-Six Winton touring car, with which C. S. Calvert carried pressmen around the course at a rapid clip until morning hours. Chester Henry's Pope-Hartford, after being used to lay out the course, was placed at the disposition of the quill-driving group. Official cars were L. T. Wiss' Packard, H. A. Bonnell's Jackson, C. C. Clawson's Buick, and F. A. Crosselmire's Oldsmobile. B. M. Shanley, who had assumed the duties of referee, had his own powerful Mercedes runabout to carry him to any point of the course.

What Was Required of the Twenty-two Competitors.

Conditions of the competition were that each machine should cover five rounds of a 94-mile circuit during the twenty-four hours, without adjustments of any kind and without stopping the engine except when authorized to do so in control. There were no classes, the little single cylinder cars being asked to do all that was demanded of the powerful "sixes." Observers had been placed round the course, but no time was taken; even at the clubhouse control, where hour of arrival was noted, the contestants were not called upon to adhere to any running schedule, the only speed condition being that they should finish the run with not



SPECTATORS WERE NEVER LACKING AROUND THE NEW JERSEY CLUB HOUSE ON BROAD STREET DURING THE CONTEST.



"MONTY" ROBERTS AND HIS THOMAS NEVER FALTERED.



RALPH OWEN, A CLEAN SCORER WITH HIS OLDSMOBILE.



RYALL AND MATHESON, FIRST TO START, FIRST TO FINISH.

more than three minutes leeway on their starting time. An observer on each car, in most cases supplied from the Stevens Institute, saw to it that the conditions of the competition were adhered to on the road.

Excepting a broad stretch of road near Mount Freedom, where the width was so slight that passing was difficult, and the mud made speed impossible, the course was an excellent one. There were trolley and steam railroad crossings that needed to be approached carefully, three or four dangerous turns, notably the one near Dover, and several towns that needed to be traversed cautiously. Adequate provision had been made to insure safety, however, red flags noting the danger spots and arrows marking all the confusing turns. When the "darky" revellers around Succasunna hatched a plot to transpose all the road signs, the cars had all been round once, the drivers knew the road, and no one was deceived.

Favored with perfect autumnal weather and fair road conditions, the initial round through Bloomfield, Montclair, Verona, Parsippany, Dover, Kenil, Mount Freedom, Morristown, Bedminster, Somerville, Scotch Plains, Springfield, Hilton, and Irvington to the clubhouse at Newark, was accomplished with few incidents. Nichols' Maxwell, owing to inattention to lubrication, burned out its connecting rod bearings and had to retire, together with its companion driven by McCormick, suffering from carburetor troubles. On one of the first stiff grades J. P. Hopson's Oldsmobile "Mudlark" was in difficulties owing to a slipping clutch, and only reached the top of the hill after vigorous efforts on the part of her passengers. The defect was remedied later and no further difficulty experienced, though it was impossible to obliterate the black points for adjustment.

One Accident Marred an Otherwise Perfect Day.

P. J. Gillette experienced some trouble with the gear shifter of his Pullman during the first round, but put matters right while the engine was running. On reaching Newark he stopped outside the clubhouse to check in and fill the gasoline tank. The operation was almost completed when suddenly the car burst into flames; in less time than it takes to realize it the gasoline tank had exploded and Peter La Greca, the mechanic, and Charles Parsons, the official observer, were enveloped in flames. There was a wild stampede for safety, and a rush to get Robert Ward's big Dietrich and the Pure Oil Company's 2,000-gallon gasoline tank wagon out of the danger zone. La Greca was carried to the clubrooms and treated by a doctor, the report being given out that although rather seriously injured he was in no danger. Reports as to the origin of the fire are as numerous as they are diversified; it is certain, however, that the control at the corner of Broad street and Clinton avenue was not sufficiently guarded with such a large quantity of inflammable liquid at hand. A couple of fire engines which arrived on the spot with due promptitude had nothing more to do than extinguish the smouldering embers of the bodywork of

the Pullman, the loss of which was estimated at \$2,000. After the accident precautionary measures were much more stringently observed, the gasoline supply wagon being isolated some yards down the road and each car roped off and all lights extinguished before filling of tanks was commenced.

Fast going had been the rule during the first round, some of the cars covering the ninety-four miles in a little less than three hours, and more than half of them coming round to the clubhouse in less than four hours. On the second round the little warmth of the afternoon sun had been withdrawn, with the result that passengers and drivers began to experience some of the disadvantages of fast traveling through a frost-bound country. The night was perfectly clear with a deep blue sky and bright moon, but the cold northeast wind destroyed all appreciation of nature's charms, the only thought of drivers and passengers being to keep out the freezing blast. Observers and passengers had smaller reason for complaint, for they could change at each round, and seek warmth and rest in the straw mattresses provided for them in the upper rooms of the club premises. The drivers, however, stuck to their task, the only change in their attitude as the night wore on being that exposed portions of their face grew smaller and smaller until at last only an ungainly mass of rugs and two eyes could be seen at the steering wheel.

A Few Rustics Greeted the Cars with Logs and Stones.

Compared with two years ago, the attitude of the rural populations towards the automobilists was pleasing, even enthusiastic in the towns. There were a few exceptions around Mount Freedom, where a stone hurled at the Matheson car smashed George Robertson's goggles and a passenger on another automobile was hit in the chest. Near Denville, too, logs were placed across the road at intervals of about two hundred feet. Hopson, on the Oldsmobile, discovered the obstruction soon enough to avoid an accident, and sent a telephone message to headquarters, on receipt of which the Winton press car was sent out to arouse the police authorities to their duty.

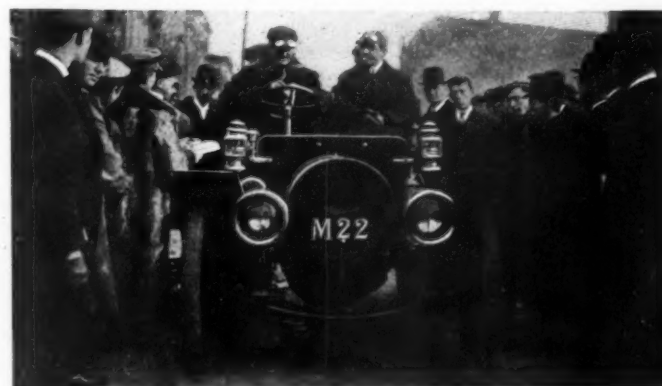
Dr. J. Finley Bell's small Hewitt runabout did not survive the second round, owing to losing time through exhaustion of its gasoline supply when far removed from the only station. E. A. Chilver's Mitchell broke the pump on the third round, overheating ensued and abandonment was decided upon. About 2:30 in the morning I. M. Uppercue, driving the four-cylinder Cadillac, ran into the bank near Somerville and smashed the front right wheel. Up to this time the car had been traveling very fast and was far ahead of the average of 19-miles an hour necessary to finish on schedule time. Ryall, who was the first to pass on his Matheson, brought the Cadillac driver into Newark and dropped him off at the local agency, the observer meanwhile staying near the car on the hillside. A new wheel was shipped out on another car, fitted to the disabled Cadillac and the journey resumed after a loss of about four hours. So fast had been the going, however, that all



PURCELL'S "SIX" FORD, WHICH WON ONE OF THE SEVEN CUPS.



KELSEY, ALWAYS A SPEEDER ON HIS HAYNES RUNABOUT.



FRANKLIN, THE ONLY AIR-COOLED CLEAN SCORER.



CLEAN SCORE LOCOMOBILE, DRIVEN CONTINUOUSLY BY R. A. GREENE, WAS A FAVORITE WITH THE LADIES.



MRS. RICKEY, WHO CONTINUED PLUCKILY TO THE END.

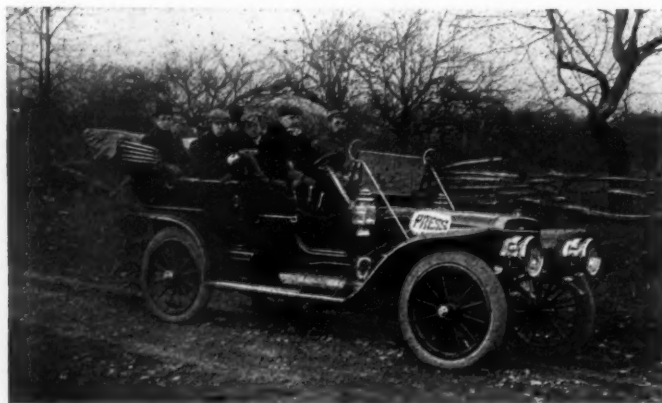
lost time was regained, and the Cadillac finally checked in on time, but with a heavy penalization score against it for replacements.

The second Marmon, the water-cooled variety, fell by the wayside during the night while trying to get round a hay wagon in charge of a sleepy driver. Roberts, who was steering the Marmon, followed the slow horse team along the narrow single-track road near Mount Freedom for a long distance, vainly endeavoring to clear a passage by repeated hoots of his horn. At last, thinking the road was sufficiently wide to allow of a passage, he speeded up his car for a rush, only to drop into a deep ditch and stick there hard and fast.

The Fleety Ones Had to Kill Time on Last Round.

By 9 A.M. fifteen cars had started out for the fifth and last round, seven of them having perfect scores and eight more or less penalization points. As the first competitor was not due to check in before 2 o'clock, no one had less than five hours for the ninety-four miles. Ryall, who had led all the way on his Matheson, quit the clubhouse at 8:30, having thus five and one-half hours to cover a circuit that he had once traveled in a little over three hours. According to regulations the cars must not stop for any reason during the last round, and should not travel in a circle, consequently the last round was as slow as some of the others had been fast. Charles Fleming's Maxwell, after leaving the clubhouse, went out of the competition, owing to difficulties with a leaky radiator, its abandonment leaving fourteen cars to finish.

Promptly at 2 o'clock No. 1 Matheson broke its way through the crowd of spectators gathered around the decorated clubhouse on Broad street and crossed the finishing line as a shout of welcome went up. Ryall limped down from his seat with the remark that he was not very tired and that he did not know where the tools were on his car. No work had been done on the engine during the twenty-four hours and the only care the Diamond tires had received was a little extra air on the commencement of the last round. Very little tire trouble was experienced on the



WINTON SIX-TEEN-SIX, WHICH DELIGHTED THE PRESSMEN.

run, though to judge by the stocks carried on some of the cars, immunity from trouble was not expected. Probably, however, it mattered little to the drivers what impression was created in the mind of the layman by the sight of four or five spares.

R. G. Kelsey's racy-looking Haynes snorted over the line a minute after the Matheson, also with a perfect score. Ralph Owen's Oldsmobile, comfortably equipped with top and windshield, was another perfect scorer, followed by the Oldsmobile "Mud-lark," with 12 points penalization for adjustments to the clutch. R. A. Greene's Locomobile, with three lady passengers on the rear seat, arrived perfect, looking none the worse for its 470-mile trip; Mrs. Rickey's Marmon came scurrying round the bend at a rapid rate, several minutes behind its regulation time, and, as events proved, with 341 points against it. S. H. Rossman had taken the wheel during the night to relieve the lady driver, who continued, however, to travel round on the car, and was on the spot smiling when the test ended. Most of the penalization was caused through a leaky petcock causing loss of gasoline.



NINETY-FOUR-MILE COURSE ON WHICH CONTEST WAS HELD.

Although P. H. Johnston's Grout and Wm. Mazzocco's Mitchell both arrived on time, they were each penalized for stopping the engine and making adjustments on the road. The big Ford six-cylinder runabout went over the line with a perfect score, its rumble seat passenger and its observer being so enveloped in woollens as to be totally unrecognizable. S. D. Atkinson brought the air-cooled Franklin to the end of its journey with a perfect record. The single-cylinder Cadillac, the only one-lunger to complete the journey, was not favored by fortune. During the night, the engine was accidentally stalled as the result of running into a tree, and a penalization of 23 points incurred. For some time the committee considered the advisability of remitting the penalization in view of the exceptional circumstances, but finally decided to apply the rules rigorously, with the result that the Cadillac was removed from the perfect score list, although finishing on time and without adjustments. I. M. Uppercue's Cadillac, a four-cylinder runabout, went down with a marred record officially, but with an excellent performance to its credit. C. E. Fisher's four-seated Autocar runabout was another prompt arrival with a marred score due to adjustments on the road. Finally Montague Roberts pulled up on the spot he had started from, held out his watch for the inspection of the official, and furnished the seventh perfect scorer in the New Jersey twenty-four-hour endurance test. All seven drivers had remained at the wheel of their cars the entire twenty-four hours, and of the others only one or two allowed



NEWARK'S MAYOR AND THE CLUB'S ENERGETIC COMMITTEE.

themselves to be relieved. The cars were put to a fairly severe touring test, but the physical strain was certainly greater than the mechanical one. It speaks much for the pluckiness of the drivers that they should have remained at their task so unflinchingly, though suffering severely from the cold during the night, and having none of the stimulants which are supplied by a track.

Half an hour after the last arrival the race committee had worked out the whole of the scores and communicated them to the press. Although under physical disability, Secretary Bonnell remained on duty throughout the whole twenty-four hours, and was well supported by a staff of officials who succeeded in making the event the most successful ever held in the State.

The score of the run:

Car.	H.P.	Entrant.	Driver.	Score.
Matheson ..	20	J. B. Ryall	J. B. Ryall.....	Perfect
Haynes ...	50	R. G. Kelsey	R. G. Kelsey ...	Perfect
Oldsmobile .	30	R. A. Greene.....	Ralph Owen ...	Perfect
Locomobile ...	20	R. A. Greene.....	R. A. Greene....	Perfect
Ford	40	A. T. Purcell....	A. T. Purcell....	Perfect
Franklin ...	28	F. C. Hinnl.....	S. D. Atkinson..	Perfect
Thomas ...	50	F. J. Titus.....	Mont. Roberts...Perfect	
Oldsmobile .	30	R. A. Greene.....	J. P. Hopson....	12
Cadillac ...	10	W. V. Snyder, Jr.	I. M. Plank.....	23
Autocar ...	30	C. E. Fisher.....	C. E. Fisher.....	76
Grout	30	P. H. Johnston...	P. J. Johnston..	107
Mitchell ...	20	J. F. Carey.....	Wm. Mazzocco...	115
Marmon ...	35	Mrs. M. H. Rickey	Mrs. M. H. Rickey	341
Cadillac ...	25	I. M. Uppercue..	I. M. Uppercue...	1098
Maxwell ...	14	J. W. Mason.....	Dan McCormick ..	Abandoned
Maxwell ...	14	J. W. Mason.....	D. Nichols	Abandoned
Marmon ...	35	Mrs. M. H. Rickey	L. H. Roberts ...	Abandoned
Mitchell ...	20	E. A. Chilver....	E. A. Chilver....	Abandoned
Mitchell ...	20	C. W. Smith.....	C. W. Smith.....	Abandoned
Pullman ...	20	F. F. Gillette....	F. F. Gillette ...	Burned
Hewitt	10	Dr. J. F. Bell....	Dr. J. F. Bell ...	Abandoned



MAKING GOOD TIME ON THE OLD NATIONAL PIKE.

One of the familiar covered bridges on the National Road near Harmony, Pa., a district in which they are a common sight. For quite a few miles the old national highway has an excellent surface in the part of Pennsylvania in question, and the stretch constitute as good link in a route for a fall tour.

RECORDS IN RHODE ISLAND CLIMB.

PROVIDENCE, R. I., Nov. 16.—The fourth annual contest for the C. Prescott Knight Cup, under the auspices of the Rhode Island Automobile Club, which was also the sixth annual hill-climb of the latter organization, proved of considerable interest, as it afforded an excellent opportunity to compare the hill-climbing powers of the cars of to-day with those of three years ago, for it was in 1904 that the previous event was held on the grade at Riverpoint. The climb is a half-mile stretch, having an average grade of 14 per cent. and being as stiff as 23 per cent. in parts, while it is also made worse by hard turns. Cedrino in J. K. Crafford's "Fiat Cyclone" brought the 1904 record of :47 4-5 seconds down to :30 flat, and every other participant in the climb did far better than the old record. The next best time was that of L. F. N. Baldwin in a Stanley steamer, the latter bursting a steam pipe on the way up.

Interest naturally centered in the final free-for-all event for the Knight Cup. Dower in the Corbin led off, but the car skidded bodily into a stone wall at the foot of the hill; skillful handling that drew a cheer from the crowd kept the car going, however, and despite the accident the excellent time of :38 flat being made. Blackinton, in a 20-horsepower Stanley, was next, but could not do better than :34. Baldwin followed in the 30-horsepower Stanley, the steam connecting pipe of which burst about 100 feet from the finish, the car starting to roll down the hill backward. Baldwin applied to the judges to enter another car, but the request was refused.

In the other events Herbert A. Capron's 30-horsepower Pope-Hartford, driven by Grady, proved a most consistent performer. It took first in two classes, making the climb in :37 3-5 twice, and with a stripped Pope-Hartford the same driver clipped 3-5 off this in the free-for-all.

Other winners were D. W. Flint in his 15-horsepower Ford, time 49 seconds; J. H. Davis, driving J. A. Foster's 35-horsepower Oldsmobile, time 49 1-5 seconds; and John L. Snow in a 45-horsepower Peerless, which made the climb in :38 flat. In addition to the Knight Cup, which was offered for the fastest time regardless of class, a handsome silver trophy was awarded in each of the events. The climb was excellently managed, the running of the entire program being executed without the slightest hitch.

The officials in charge of the event were: Dr. Julian A. Chase, referee; William Penn Mather, R. Lincoln Lippitt, Darwin Almy and C. Prescott Knight, judges; John R. Dennis, Charles F. Almy and F. H. Smith, timers; Everett F. Boyden, starter, and Eugene M. Sawin, clerk of the course. The summary:

GASOLINE CARS COSTING \$1,000 AND UNDER.

1. Ford, 15-h.p.; driver, D. W. Flint..... :49
2. Ford, 15-h.p.; driver, A. B. Rust..... :56 1-5

STEAM TOURING CARS WITH TONNEAU.

1. Stanley, 20-h.p.; driver, L. F. N. Baldwin..... :36 1-5
2. Stanley, 20-h.p.; driver, B. F. Blackinton..... :40

GASOLINE CARS COSTING \$3,000 AND UNDER.

1. Pope-Hartford, 20-30-h.p.; driver, H. A. Capron..... :37 3-5
2. Ford; driver, James Myers..... :44 4-5
3. Pennsylvania; driver, Sweeney..... :55

GASOLINE CARS COSTING \$2,000 AND UNDER.

1. Oldsmobile, 32-h.p.; driver, J. H. Davis..... :49 1-5
2. Corbin, 24-h.p.; driver, John Pugh..... :51 2-5

STEAM RUNABOUTS.

1. Stanley, 20-h.p.; driver, L. F. N. Baldwin..... :31 3-5
2. Stanley, 20-h.p.; driver, B. F. Blackinton..... :33

GASOLINE CARS COSTING \$5,000 AND UNDER.

1. Pope-Hartford, 25-30-h.p.; driver, Grady..... :37 3-5
2. Peerless, 30-h.p.; driver, J. L. Snow..... :42
3. Stevens-Duryea, 35-h.p.; driver, C. D. Snow..... :47
4. Pennsylvania Roadster; driver, Sweeney..... :50 3-5

GASOLINE CARS COSTING \$5,000; TOURING CARS ONLY.

1. Peerless, 45-h.p.; driver, J. L. Snow..... :39
2. Fiat, 60-h.p.; driver, Crafford..... :45 1-5
3. Stevens-Duryea, 50-h.p.; driver, Conger..... :51

FREE-FOR-ALL; NO RESTRICTIONS.

1. Fiat, 60-h.p.; driver, Cedrino..... :30
2. Stanley, 20-h.p.; driver, B. F. Blackinton..... :34
3. Pope-Hartford, 25-30-h.p.; driver, Grady..... :37
4. Corbin, 30-h.p.; driver, J. Dower..... :38
5. Stanley, 20-h.p.; driver, L. F. N. Baldwin..... Did not finish



SCENE AT THE START OF THE EVREUX SPEED TEST ON A PERFECT STRETCH OF ROAD GUARDED BY 300 ARTILLERYMEN.

EVREUX HILL-CLIMB HAD STARTERS IN PAIRS

PARIS, Nov. 11.—Racing events for 1908 have finally closed down with a meet at Evreux, sixty miles from Paris, participated in by over one hundred cars. Rigal, on the four-cylinder Darracq racer built for the Grand Prix, took first honors by covering the flying kilometer in 27 3-5, equal to 80 miles an hour, and marking up 1.13-5 for the mile standing start. These two records secured for him the Coupe d'Evreux, the most important trophy offered for competition. Though the road surface was perfect and the track securely guarded by troops, Rigal could not get full speed out of his racer for the kilometer run for fear of not being able to slow down sufficiently before striking a patch of greasy cobblestones.

The day's program had been arranged by the editor of *Les Sports* so that all competitors took the flying kilometer in the morning, and that the two first in each series should run together in the afternoon over the mile course, with a standing start. In every respect the innovation was a success, in several cases the cars being so evenly matched that they ran neck and

neck until within a few yards of the finishing post. Naturally such a method of racing was only possible on an exceptionally wide road with a perfect surface for the full width and well guarded by troops.

Hemery, on the Benz racer which he handled in the German Emperor's race, won in his own class, defeating a Minerva after a very keen struggle. In the Targa Florio class competition was equally intense between Metargy's Darracq and a Bayard-Clement, won by the former by a couple of lengths.

Although fast time was always made in the tourist class, public interest in the fourteen divisions might have been considerably lessened but for the system of sending the competitors away in pairs. Fastest time of any four-cylinder touring car was made by a Minerva, fully equipped for touring and driven by its owner. A Benz was second in the general classification and a Brasier third. Brasier took the first prize in the flexibility test with a six-cylinder car by covering the kilometer in 0.33 and 3.50. There were four other competitors. Paul Meyan's big Dietrich limousine with inclosed driver's seat—one of the largest closed bodies ever built—excited interest by covering the kilometer at the rate of 55 miles an hour.

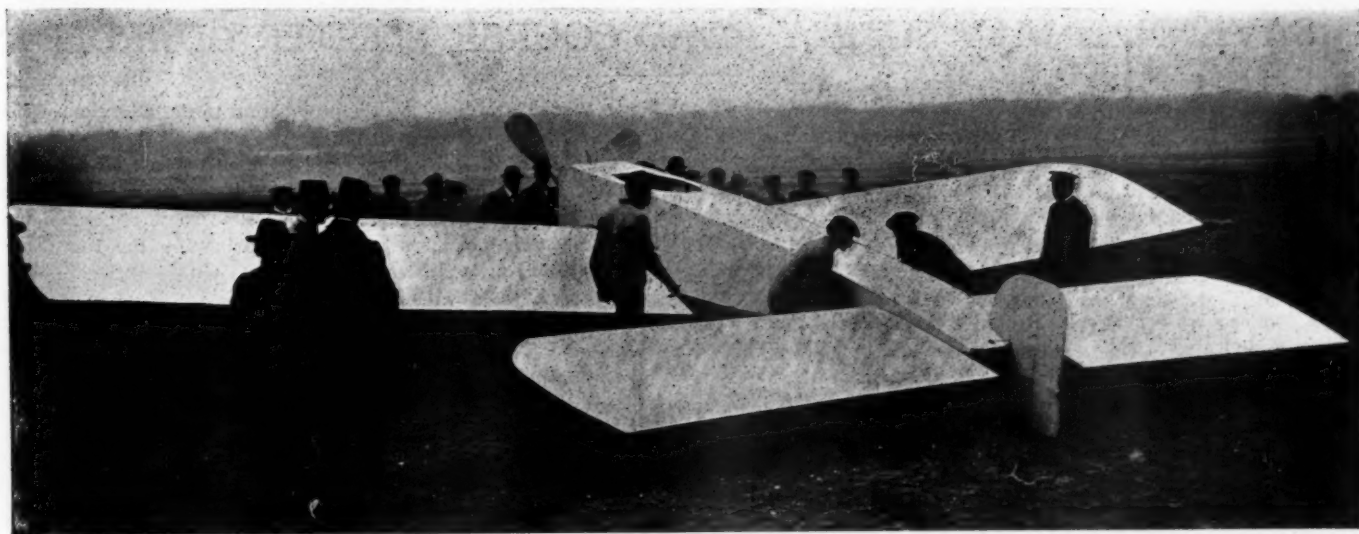
GERMANY'S PRINCIPAL 1908 EVENT.

BERLIN, Nov. 12.—The meeting of delegates of the clubs connected with the cartell of German automobile associates was held here with the Duke of Ratibor in the chair. The main features of the proceedings, which were attended by twenty clubs, was the question of the Prince Henry Tour, which is to be Germany's principal event next season and will take place in June, 1908. The basis for the regulations will be taken from those of the Herkomer tour, but official sanction must first be given before this matter can be entered into, as the clubs are rightly nervous of spending too much labor on what may be eventually vetoed. Letters were read from the Home office and Office of Public Works, stating that permission would in future only be granted to such tours as were absolutely indispensable for the welfare of the industry, and the South German and Rhenian clubs mentioned their intention of dropping the big tours and trials planned for next season. Uniform danger boards are to be put up throughout the empire, and an effort will be made to induce the Prussian Government to send a representative to the meeting of Government delegates to regulate motor traffic on the Continent.



FRENCH STATESMEN HAVING EXPERIENCE WITH TIRE INFLATION.

Premier Clemenceau and Deputy Jaurès, the socialist firebrand of the French Government, have been caught by the enterprising photographer in the act of inflating their automobile tires, the former with the aid of a compressed air tank, the latter by the more vigorous method of the hand pump. Unfortunately for the romance of the story, veracity compels the admission that the political leaders were not present in the flesh, but in wax.



LOUIS BLÉRIOT'S AEROPLANE, WITH ANTOINETTE MOTOR, MAKING ITS FIRST APPEARANCE AT ISSY-LES-MOULINEAUX, NEAR PARIS.

EIGHT FLYING MACHINES BUSY ROUND PARIS

PARIS, Nov. 12.—With the *Ville de Paris* and the *Patrie* in the air and the heavier-than-air flying machines of Farman, Comte de la Vaulx, Delagrangé, Blériot, Santos-Dumont, and Pelterie skimming over or on the ground every day, there is no lack of interest in aeronautics around Paris.

Louis Blériot, since discarding last year's moderately successful cellular aeroplane, has been busy on a new model, which was tried out for the first time this week on the Issy-les-Moulineaux drill ground in foggy weather. The new machine is of the monoplane type, eleven yards in width from tip to tip, and thirty square yards bearing surface. To the rear of the two main wings is the elevating rudder divided into two independent sections, and surmounted by a vertical rudder. The engine, a 50-horsepower Antoinette, of the same type as that used by Farman, is carried forward, where it is coupled direct to a four-bladed propeller. A peculiarity of the construction is that the framework of the machine is covered with a special varnished paper, giving considerable strength with minimum weight. The aeroplane is mounted on three rubber-tired wheels, two forward and one in the rear, the latter one being fixed to the vertical rudder and turning with it.

On the trial trip the steering gear was somewhat stiff, the pilot only being able to get the steering wheel out of a straight line after considerable exertion, and then in an abrupt manner. After a few runs under these conditions, the motor pulling well and the machine acting in a fairly satisfactory manner, the rear wheel was bent under the strain and the tests abandoned.

Later in the day Comte de la Vaulx made the first public appearance with his new heavier-than-air machine on the Saint-Cyr military ground. The machine, which is also of the monoplane type, and is driven by an eight-cylinder 50-horsepower Antoinette engine, has a couple of propellers to the rear of the bearing surface, and turning in opposite directions. For the first trip Comte de la Vaulx satisfied himself with runs across the ground to familiarize himself with the working of the machine. Despite the heavy, clay surface, the speed was satisfactory, it being necessary to cut out the ignition to prevent flight.

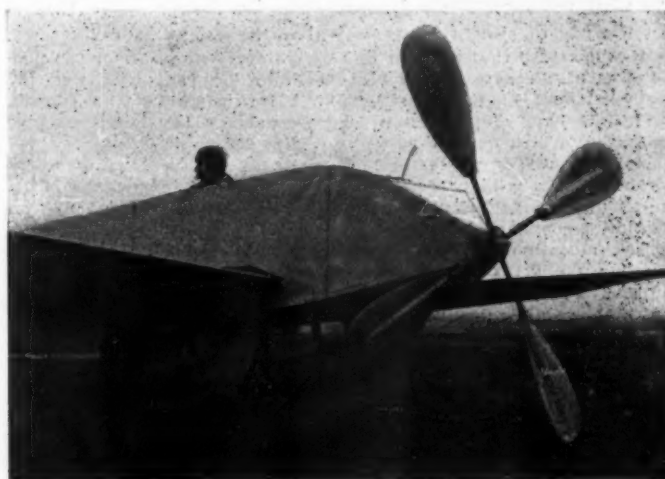
Henry Farman, who has admittedly got a long lead on all his aeronautical rivals, has been quietly training at Issy every day during the past week and has made several flights varying from 300 yards to almost 800 yards in a straight line. On two occasions he has come back to his starting point and descended to earth without injury to the aeroplane. On the last occasion, however, in the presence of a crowd of 2,000 persons, who

somewhat hindered the movements of the flyer, Farman came down too abruptly and broke one of the wheels. Instead of repairing, he has decided to commence the construction of another aeroplane of smaller area, to be driven by a Panhard-Levassor motor of 100 horsepower. His abstention leaves the \$20,000 Deutsch-Archdeacon prize in abeyance for a time, for although Santos-Dumont has brought out No. 19 and has invoked the Contest Committee to witness a performance, he is not yet sufficiently in training to accomplish a circular flight.

Lieutenant Lahm, winner of the first international aeronautical cup race, has made an ascension with Hon. C. S. Rolls, from Short's balloon works at Chelsea, London, to Chelmsford. The feature of the trip was that it was intended to descend as near as possible to the house of Claud Crompton, an enthusiastic Chelmsford aeronaut. Wind being favorable, this was done with ease.

Balloon Trips to Order in New England.

BOSTON, Nov. 18.—Arrangements have been made by the Pittsfield Aero Club to make ballooning one of the most popular sports in 1908. According to Charles J. Glidden, a balloon garage will be built and arrangements will be made with the gas company for six ascensions daily. To make a trip all that will be necessary will be to telephone or telegraph the club and in two hours a balloon will be inflated and ready for a journey.



BLÉRIOT SEATED ON HIS BIRD-LIKE FLYER.

SAVANNAH MAY SUPPLY ROAD COURSE, SOLDIER GUARDED

SAVANNAH, GA., Nov. 18.—The Savannah Automobile Club is powerfully interested in a proposed stock chassis race, to be held in January next. For some time past members of the club have been quietly making progress in this direction, and a number of the most influential citizens, including Mayor George W. Tiedeman, have given the proposition their hearty sanction. There is a ten-mile stretch of the finest road possible in the outskirts of the city, and it is possible to add as many miles more should it become necessary. The course is easily reached from the city, and application has been made to the County Commissioners for the use of the road for the proposed race, and it is understood that such permission will be readily granted. The road and all interesting highways would be closed to traffic, and application will be made to the proper authorities for the use of the Georgia State militia, stationed in Savannah, to help police the course. It is expected that there would not be any difficulty in obtaining the assistance of the local State militia.

The plans for the race were thoroughly discussed at a meeting in the Hotel de Sota last week, and one of those in attendance was C. Wood Tatham, of New York City, who is more or

less responsible in bringing the proposition to the attention of the local automobile club.

No difficulty will be experienced in financing the scheme, and sufficient money will be subscribed by those interested in the contest to put the roads in the best possible condition, supplying telephonic communication at different points on the route and supplying visiting autoists and contestants with sufficient garage accommodations. Two or three New York autoists have looked over the proposed course and state that it will afford every facility demanded of a stock car race.

Another meeting will be held within the next few days, and invitations will then be extended to the leading manufacturers and other prominent motorists to visit the course, if possible, and offer any suggestions. The Savannah authorities will also ask the American Automobile Association to sanction the event when the details are thoroughly worked out. The long-distance stock car race, however, will not be the only automobile event to be held, as it is proposed to conduct a series of interesting events during the winter, the entries, of course, determining the exact nature of the other races.

AN AUTOWAY TO THE TOMB OF WASHINGTON

WASHINGTON, D. C., Nov. 18.—Every automobilist in Washington has constituted himself a committee of one to help along the work of the Mount Vernon Association in constructing a boulevard from Alexandria to the home of George Washington at Mount Vernon, Va. Preliminary steps have already been taken. The circuit courts of the counties of Alexandria and Fairfax, Va., will soon be requested to appoint commissioners to ascertain what property it would be necessary to condemn for such a highway, and to estimate the resulting damages and benefits. As soon as the cost can be accurately estimated it is proposed to begin an active campaign for the construction of the boulevard.

This project is one that deserves the cordial support of the public. The existing road leading to Mount Vernon should

be superseded by a modern, broad driveway, in order to render as accessible as possible the spot regarded as sacred by all Americans. At the present time it is impracticable to reach Mount Vernon by automobile on account of the exceedingly bad road. The highway connecting Mount Vernon with Washington is a rare antique—one of the relics of the old heart-breaking days when life was largely spent in struggle with adverse nature. That this road should remain to this day is an anomaly.

With a broad, properly prepared roadway, the journey to the home of Washington would become a pleasantly memorable experience to hundreds of Washington automobilists, to say nothing of the hundreds of automobilists who come to the National Capital every year in their cars.

GERMANY'S DENATURED ALCOHOL EFFORTS

CONSUL T. J. Albert, of Brunswick, Germany, writes that at a recent agricultural congress the question was considered as to what measures seemed appropriate for the general extension of the use of spirits for technical purposes, as follows:

It was stated that the first and most important point for the possibility of an extended technical application of spirits was the establishment of the price. This is influenced by two factors, first, the cost of production, and second, by legislative revenue measures which operate to make spirits dearer or cheaper.

As the cost of production of spirits cannot be lowered under certain limits without destroying the value and importance of its production to agriculture, and as the lowering of the price is an essential condition for its introduction into use for technical purposes, attention must be directed to the point that spirits after leaving the distillery or place of manufacture experience no increase in price which can be possibly avoided. In order to accomplish this, spirits destined to be used for technical purposes should be free from any fiscal tax or, as is the case in Germany, a premium in the shape of a rebate should be paid at the expense of spirits used for drinking purposes.

The cost of denaturing spirits should also be reduced as low as possible by the choice of suitable materials for denaturing, and this cost not increased by fees levied for denaturation. The process used in Germany, which allows spirits which are to be used for motive power to be denatured by the far cheaper material, ben-

zol, in place of one-half of the materials ordinarily necessary for the purpose, was commended. In any case the choice of the cheapest possible material for denaturing should not lead to the employment of materials which would have an unfavorable influence on the spirits in its various ways of application, or materials which by simple manipulation can be removed or remain concealed in the spirits.

In order to prevent the arbitrary advance in the price of spirits by the retail trade, to which it is not seldom subjected, it was suggested that the central distributing stations which supply the retail trade with their goods should make known by continuous advertising throughout the territory concerned the proper retail prices of spirits, and, further, that the co-operation of the retail trade in cheapening prices should be compelled by official restraints, such as granting of licenses of sale upon conditions or by official control.

In Germany the tax on domestic spirits per liter (1.0567 quarts) of pure alcohol is 22 1-2 cents, of which 17 cents is for consumption excise, 4 cents for mash-tub tax, and 1 1-2 cents for distilling tax. Upon application to the proper authority this tax is refunded on spirits used for drinking purposes when exported, and also on alcohol used in perfumeries, head, tooth, and mouth washes, and fluid alcoholic medicines, and for certain ethers.

The present distillery price of refined spirits for 100 liters pure alcohol taxed is \$30, while the price for denatured spirits 90 per cent. alcohol is \$5.95 per 100 liters.

CONCERNING THE PROGRESS OF IGNITION

By CHARLES B. HAYWARD.

WHEN the problem of successfully maintaining a current of one or two amperes at six to eight volts on an automobile was presented to electrical experts by the sorely puzzled manufacturers of several years ago, they looked upon it as something in the light of child's play, and, as such, immensely beneath their dignity to be concerned with. To men who were studying the problems of generating thousands of horsepower at increasingly high voltages, and of transmitting it efficiently over long distances, the idea of not being able to successfully achieve such a ridiculously trivial thing as this appeared absurd. As a result, the ignition problem, which was long one of the most pressing that the automobile builder had to contend with, was left entirely to him and his confrères in the accessory manufacturing line to solve. Few, if any, of the high-priced experts employed by the large companies regarded the matter with anything but complacent and indulgent skepticism of the "I-could-show-you-how-to-do-it-in-short-order" type, and those same companies which were turning out millions of dollars' worth of electrical apparatus apparently never looked upon the automobile ignition field as anything to which their unequalled facilities could be profitably devoted. It is worthy of note in this connection that one company, which literally turns out millions of magnetos and induction coils for telephone purposes, has just taken up

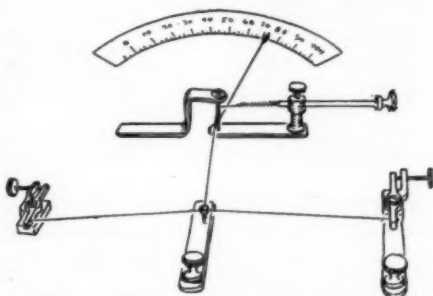


FIG. 1.—Heinze hot-wire pyrometer for testing temperatures of secondary sparks.

the manufacture of ignition spark coils, while another and one of the largest manufacturers of electrical apparatus in the world is now turning its attention to the production of a magneto.

So it came about that the development of the ignition system of the automobile was left largely to the resources of the automobile designer, who knew the conditions but had little conception of the electrical requirements, and the accessory maker, who at that time had no knowledge of the former and was far from being well posted where the latter was concerned. Electric ignition was nothing new, but the fact that a battery, an induction coil, a timer and a plug did not necessarily constitute an efficient ignition system was no better realized six years ago than the fact that a gasoline engine and a running gear did not make an automobile.

Early Coils Were Extremely Crude.

As practice in this country has tended more to the adoption of the high-tension type of ignition, most of the progress in this

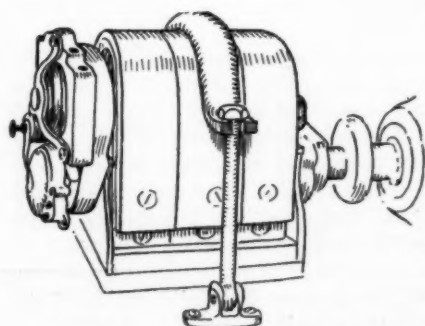


FIG. 2.—Method of fastening and drive of the Bosch high-tension magneto on the Lozier.

field centers about the latter where the American maker is concerned. And when the crudity of the apparatus that the pioneer makers had to contend with is borne in mind it is small wonder that the ignition system was long the *bête noir* of the autoist. As a matter of fact, in spite of its extended use in the telephone, the induc-

tion coil had progressed but little from the days of Ruhmkorff—its efficiency was about on a par with the wooden axle of our forefathers as compared with the modern ball-bearing. With the exception of such large coils as were specially made for laboratory use, the manufacture of induction coils was entirely according to rule of thumb, and it is to the simultaneous development of wireless telegraphy and the automobile, but more to the latter, that the scientific investigation devoted to the subject in the interim is due.

A great amount of study and experiment had been carried on with a view to raising the efficiency of large transformers for commercial use, but, as already mentioned, the sparking coil was then considered too petty an affair to merit serious attention, except on the part of those directly engaged in its manufacture for automobile use. It is stated on good authority that the efficiency of the majority of the earlier coils seldom exceeded 15 per cent., a fact that readily accounts for the disheartening rapidity with which a set of dry cells became exhausted. But there was no data on which to base standards—cores were made either much too large or too small, usually the former, making a mass of iron that could not be quickly magnetized and demagnetized; the wire of the secondary winding was frequently too fine and there was too much of it, making the resistance of the secondary coil too high; condensers were poorly balanced and vibrator speeds were very low owing to the crude design of this essential—in short, it had always been considered that coarse wire wound about an iron core and a fine winding over that made an induction coil. Some of those old-time coils had a seven or eight-inch core with number 40, or even finer wire in the secondary, and as a consequence of the latter their resistance was as high as 7,000 to 8,000 ohms.

In contrast with this, the resistance of the modern coil ranges from 2,500 to 5,000 ohms, it has a core measuring on the average 1-2 by 5 inches, and the secondary winding is of number 36 wire, while the vibrator speeds are now as high as 80,000 per minute, as compared with 15,000 to 20,000 of the old coils. These appear to be simple changes in design, but it required endless study and experiment to bring them about. It was known that special grades of iron were required for the cores, but further than this no study of the qualifications necessary in this essential had been undertaken up to within a comparatively short time ago.

In the past five years the efficiency of the induction coil designed for automobile use has been practically trebled, for which scientific study of the requirements has been almost wholly responsible. It was realized that the hysteresis qualities of the core were an extremely important factor in limiting vi-

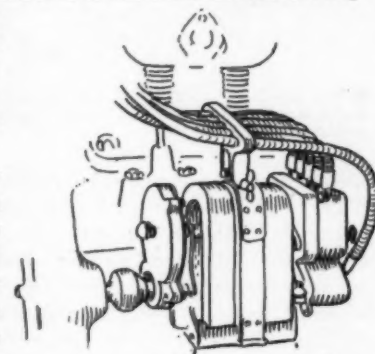


FIG. 3.—Location and drive of the Eise-mann magneto on the Packard, the strap fastening being held by a single thumb screw.

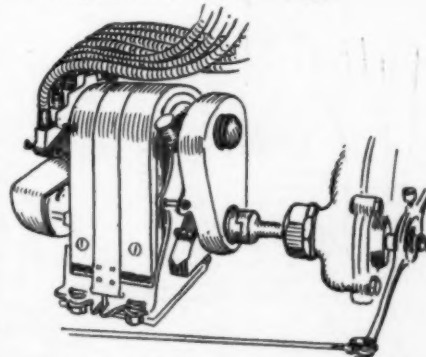


FIG. 4.—Method of advancing and retarding the timing of the spark on Eise-mann magneto as mounted on the Peerless.

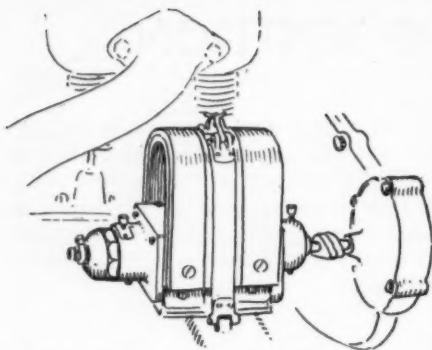


FIG. 5.—Drive of special low-tension magneto taken from short independent shaft forward on the Locomobile.

an instrument for testing this quality of iron. It consists of a special form of generator with a bi-polar field, between the pole pieces of which the sample to be tested is revolved. The winding of the field is independently energized by one milliamper of current, this factor thus being a constant, the resistance of this field and that of the second armature carrying the indicating pointer being the same. According to the character of the path for the magnetic flux presented by the revolving sample of iron, the pointer is deflected more or less, and it is said to be nothing unusual to find that samples of iron differ 20 to 30 degrees, the scale of the instrument being calibrated according to a standard evolved by the inventor.

Mr. Heinze has also devised an extremely ingenious instrument to measure the relative temperatures of the secondary sparks produced by different coils, this being patterned after the principle of the hot-wire pyrometer, and forming an extremely sensitive indicator of varying degrees of temperature as is essential with the slight amount of heat produced by the spark. Both these and a standard form of milliamperemeter for the measurement of secondary currents have played an important part in the development of the Heinze coils, while similar painstaking investigations have been carried on by the makers of other well known spark coils in their laboratories, of which the makers of the Splitdorf, Connecticut, and Pittsfield coils may be cited as instances.

Improvement of Sources of Current Supply.

In view of the capacity of the old-time coil for wasting current, which was also a characteristic of many timers, it is scarcely to be marveled at that the dry cells of those days did not acquit themselves over creditably. There was much to be learned about the making of dry cells for automobile use and this was even more true of the storage cell, as the latter had never been employed under similar conditions previously. Just what changes the makers of dry cells have made in their product to bring about the result is usually a trade secret in each case, but the fact remains that the average output of the modern dry cell, such as

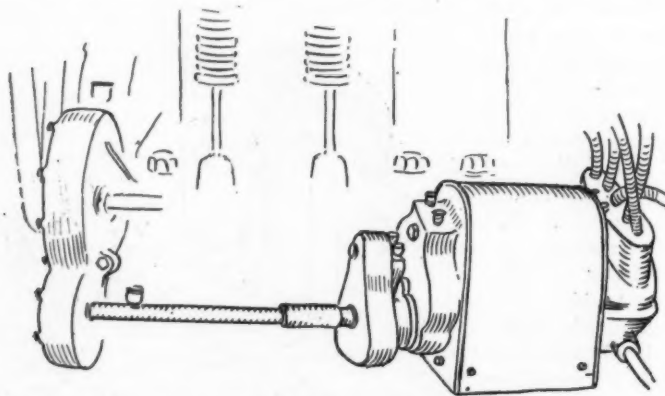


FIG. 6.—Placing of the Remy high-tension magneto on the Apperson; the independent driving is actually much longer proportionately than it appears in the foregoing sketch.

brator speeds, as had been the excessive amount of iron first used, as the rate of vibrator working naturally depends upon the rapidity with which the core is capable of becoming magnetized and demagnetized. As a means of determining this, John Heinze, of the Heinze Electric Company, Lowell, Mass., has devised

the Columbia or Ever-Ready brands, is now well in excess of 20 amperes when new, where formerly it seldom exceeded 15. While the efficiency of the storage cell designed for automobile use has been correspondingly increased, it has been largely a matter of adaptation to new conditions, and this has been carried out so thoroughly in some of the better known makes such as the Witherbee, National, Geiszler, Royal, Vivax, Rex, Porox and others that there is little left to be desired, though, as will be obvious from the foregoing, the sins of the coil and other parts of the ignition system are easy to attribute to the battery.

Improved forms of grids, special methods of pasting, new forms of insulators, improved gas vents, and special compositions for the active material, as well as a study of the requirements of the strenuous service required for an automobile ignition battery, have all contributed to bring the small accumulator to a state of perfection where troubles from shortcircuiting

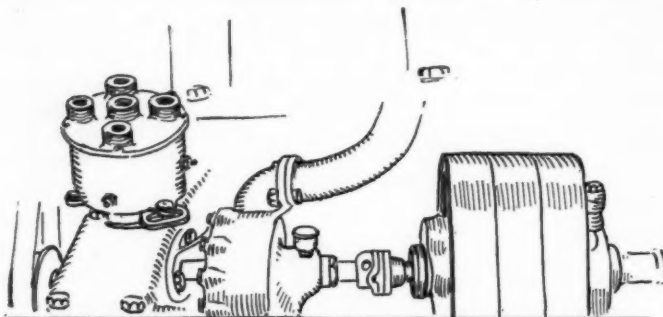


FIG. 7.—Gianoli high-tension magneto with independently operated distributor forming service ignition system of the Columbia gasoline-electric.

through disintegrated plates, buckling and sulphating are comparatively unknown, for which, of course, the increased knowledge on the part of the autoist in handling the battery is in a measure also responsible.

It goes without saying that the most important step in advance, where the source of current supply is considered, has been the development of the magneto, and it appears only logical that with the immense amount of surplus power of the average automobile motor that a small fraction of it should be utilized for generating the ignition current—in other words, that the source of ignition current should be mechanical and thus better within the control of the driver, rather than chemical. Foreign

practice in this regard has always favored the magneto, while in earlier years the tendency was more toward the small direct-current generator. The latter has undergone great improvement, and though more or less generally used, as represented by the Apple apparatus, has not found favor to the same extent as the magneto. Two systems of the latter have been developed for high-tension service, the Bosch of the true high-tension type and the Eisemann of the high-tension-with-coil type, of which the Remy, Pittsfield, Heinze, Dow and Holley are also examples, though the last-named embodies several special features, while the Splitdorf and the U & H belong to the former class, and the makers of the Remy are just introducing a machine of this kind of special design. The K-W magneto is an American machine using a coil, but is of the constant generating type and is characterized by numerous distinctive points of design, which place it in a class by itself.

Improvement in the mechanical generator has taken the form of refined construction rather than the adoption of new prin-

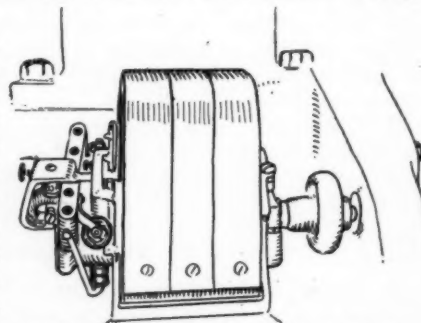


FIG. 8.—Simple enclosed drive of the Bosch high-tension magneto on the new Selden 45-horse-power car.

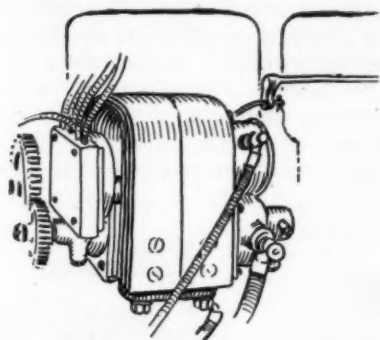


FIG. 9.—Special Holley high-tension magneto designed for small high-speed, four-cylinder motors such as the Ford.

the make-and-break system of ignition has not met with much favor at the hands of American makers, such cars as the Locomobile, Studebaker, Columbia and one or two others such as the Premier employing it. The first-named uses a special magneto made in the home factory, while the Bosch low-tension machine is usually favored on the others.

Though practice is rapidly approaching a standard in this respect, considerable diversity in the mounting and drive of this essential of the power plant is shown by various cars, as will be evident from the accompanying sketches. Some representative examples of this were to be seen in the Garden. Among the different makes noted are the Remy on the Apperson, the Bosch on the Lozier, Selden, Franklin six-cylinder, Stearns, Thomas, Pierce, Matheson and others, while the Eisemann is to be found on the Packard, Peerless, Winton, Walter and Pope-Toledo, though an option of either of these makes is given

on the latter car; on the Columbia gasoline-electric the Gianoli high-tension magneto is employed. In every one of the foregoing instances a dual system of ignition is fitted, and practice in this regard may be catalogued as an improvement, as, despite the advances made in ignition systems as a whole, their fallibility has thus come to be recognized in a practical manner and suitably provided for. In numerous cases this takes the form of a completely independent duplicate system of the standard unit-coil and accumulator type, using a separate set of plugs, while in others the duplication is not carried this far, the distributor of the magneto and the same plugs being utilized in both cases. Taken all in all, the magneto has been perfected to a point where Continental practice in fitting it alone as a means of ignition should soon be followed here on cars the list price of which does not permit of installing two systems. Starting on the magneto

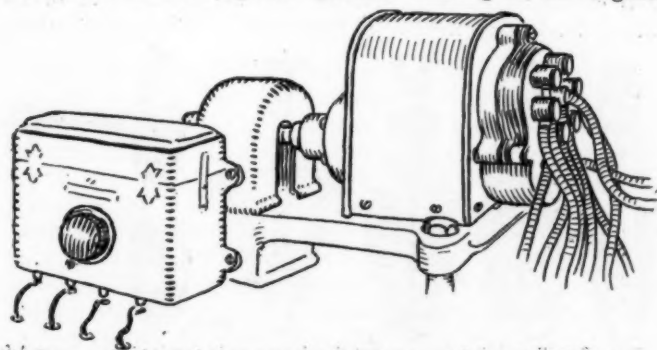


FIG. 11.—Pittsfield high-tension with coil type of magneto, mounted for demonstrating purposes, the coil ordinarily being placed on the dash.

ciples, though better distributor design and primary circuit - breaker have also largely contributed toward the unusually high degree of simplicity and reliability that is now a feature of the magneto. As the low-tension magneto has always represented an electrical generator in its simplest form, nothing further in this direction was to be looked for, but despite this

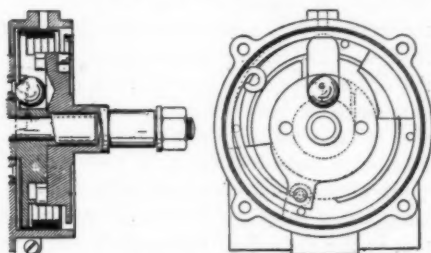


FIG. 10.—Details of the positive self-starting device employed on the U & H magneto.

has been made practically as easy as with a battery, though in this connection the special starting device incorporated in the U. & H. German magneto is of interest. It consists of an arrangement which permits of spinning the armature.

Early trials proved the single coil and distributor system to be productive of endless trouble on the secondary side, which caused its virtual abandonment at that time, but its manifest simplicity has brought about a renewal of interest in it, while improvements in high-tension distributors made in the meantime now permit of its use on the same plane of efficiency as the unit-coil type. The Mosler apparatus is an instance of this, while the Leavitt ball-bearing timer and distributor is an example of the improved form of device now employed for handling the high-tension current. Then there are special systems, such as the Atwater-Kent "spark generator," which is a self-contained unit adapted to be mounted on the dash of the car and driven from the camshaft of the motor. This is designed to be used in connection with batteries and consists of a single non-vibrating coil with appropriate mechanism for both the low and high-tension currents.

On the other hand, there is a decided tendency to retain the four unit coils and to make their working synchronous by eliminating the vibrators and controlling their action by the use of a fifth vibrator coil. As this "master vibrator" works the same for each cylinder, it insures regular firing, as well as much greater ease of adjustment and consequent economy in current. Instances of this are to be found in the Splitdorf system, a feature of which is the use of an individual switch on each non-vibrating coil to facilitate testing, and in the K-W system in which the K-W magneto is employed as the source of current. A system of this kind that marks a considerable departure is that brought out by the Western Electric Company, in which the four unit coils are assembled in an insulating case placed right on the motor. This case is permanently fixed in place and contains all the primary and secondary connections, so that the coils simply have to be slipped in. On the dash a twin vibrating coil is used, one of the units being provided as an emergency. For shifting from one to the other, a pole-changing switch is employed, thus preserving the contact points of the vibrator against the pitting action which ensues from continuously sending the current through it in one direction.

The weak points of every ignition system of earlier days were to be found in these essentials, and, next to the coils, they ranked high as sources of trouble. If the truth were to be told, the plug was suspected far too often and the timer far too little, and this is probably the case even at present. The timers that had been in use prior to the advent of the automobile gave satisfactory service at speeds of 300 r.p.m. or less,

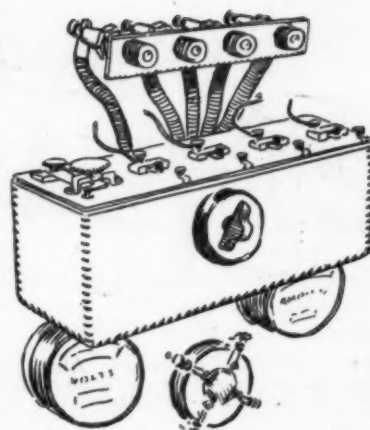


FIG. 12.—Splitdorf synchronous, "master vibrator" system as mounted for demonstration to show its unusual efficiency.

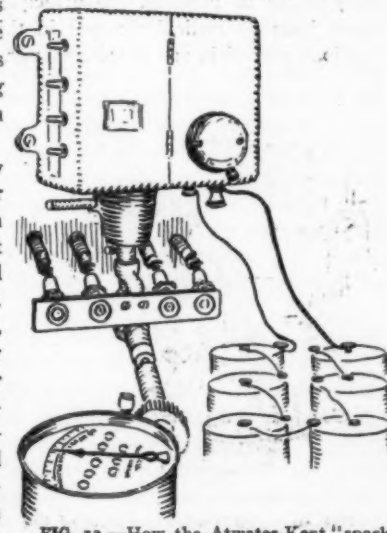


FIG. 13.—How the Atwater-Kent "spark generator" was run more than the equivalent of 4,000 miles on six dry-cells.

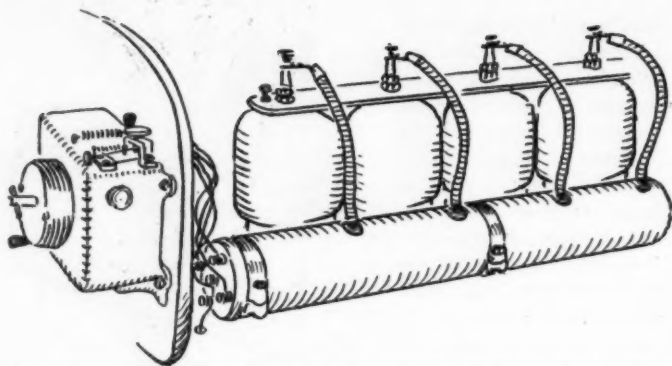


FIG. 14.—Illustrating the unusual location of the coils in the Western Electric "master-vibrator" system which is distinguished by the use of an emergency coil and a pole-changing switch.

for which they were designed, but rapidly went to pieces at higher speeds under the severe duty imposed on a car. The designer was confronted by the task of striking a medium between two essential but divergent qualities—the wipe contact type was superior electrically, while the ball contact type was by far the better form of construction. The former has been gradually eliminated, its place being taken almost altogether by ball or roller contact timers, the Bemus being a good example of the first named. Flimsy construction and poor materials were really at the foundation of all the early timer troubles and these have been practically done away with by the use of steel, bronze and better insulating materials, the employment of ball bearings and the possibility of filling the timer with a lubricant.

In a measure the same thing applies to the spark plug; porcelains were of poor quality and ill adapted to the service required and as a matter of fact, in common with many other things about the motor, these requirements were not any too well understood. Study of the principles involved and improvement in the materials employed, as well as in the workmanship, has been responsible for the vast advances made. The truth of this will be apparent on a little reflection, for while the ignition apparatus of the present day is about as far removed from that of a few years ago as it is possible to imagine, the principle remains the same. There have been no radical changes in this respect where any of the various essentials are concerned, nor, for that matter, in the manner of combining them that has prevailed from the first.

It has been almost entirely a matter of improving upon standards which were found in existence when the automobile came into being, and that this was not always brought about directly will be seen when it is recalled that the single-coil system of ignition was almost universally abandoned after but a comparatively short trial. Now it is being taken up again, both in its original and in a modified form, but it must be admitted that it was really the

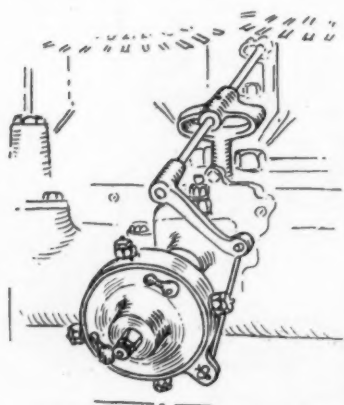


FIG. 16.—Odd location and drive of the primary timer on the Corbin. This is brought out at right angles between the central cylinders.

shortcomings of the timer and the coil trembler that caused its early abandonment, and not any inherent defect in the system itself. It was found impossible to confine the secondary current within bounds with the facilities then offered by timers and distributors and the vibrating mechanism of the single coil employed was frequently faulty to a degree undreamed of by the present-day autoist, whose experience does not date back to a time that, somehow or other, no one ever thinks of as the "good old days." A hundred-mile trip in a day was then unusual, but a twenty-mile trip that did not give rise to more or less frequent necessity for vibrator adjustment or similar tampering with some other part of the ignition system, was far more so.

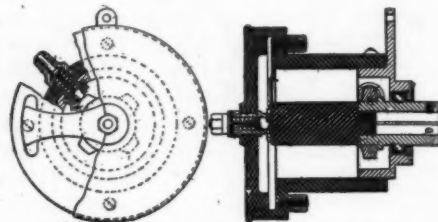


FIG. 17.—Part sectional plan and longitudinal section of the Leavitt distributor showing its simplicity.

Even the wiring of that day was only a makeshift, but it was the best that could be done, for there was no insulated wire on the market specially designed to carry high-tension currents under such adverse conditions as those which prevailed under the bonnet or, as often as not, under the body of one of those old-timers which represented a maximum degree of inaccessibility.

But to get back to the fact that, with all the improvement that has been accomplished, original principles have been adhered to throughout, it is safe to say that nothing furnishes a better illustration of this than the spark plug. Just who was responsible for the original of this essential does not appear at the moment, but ever since the time when Renault brought out the fact prominently that electric ignition on the automobile was a practical success by winning a long-distance road race with a car thus equipped, the spark plug has adhered closely to original principles, and in very many cases to original lines of construction. It will be recalled that in the early days European builders were extremely skeptical of the electric method of ignition, and the hot tube was very general, at least one continuing it even after having adopted electricity, though the American makers used the latter from the first.

Every spark plug consists essentially of an insulated terminal or electrode adapted to be screwed into the cylinder head, the body of the plug thus forming the ground or return connection, and much of the experimenting has been with a view to improving the qualities of the insulating material. Mica, lava, artificial stone and many special compounds have all been pressed into service, despite which porcelain has still continued to hold its own. Glass is the latest of these substances to be employed, as embodied in the Anderson plug. Other improvements have taken the shape of modified forms of terminals, such as the Reliance, in which the insulated electrode is ground off flush with the insulating porcelain; the placing of this terminal in recesses or chambered ends, as in the well-known Spitfire plug, the "Vim" plug, here shown, and a number of others, while accessibility has also been taken into consideration, as is evident from the development of the Breech-block plug, the Brown "Separable lock" plug and others.

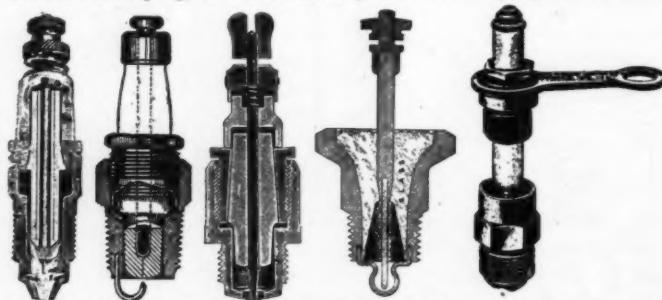


FIG. 18.—Illustrating some recent developments in spark plugs. From left to right these are the K-W "Vim" plug, the "Reliance," the "Edco," the Anderson glass-insulator plug, and the "Breech-block" plug.

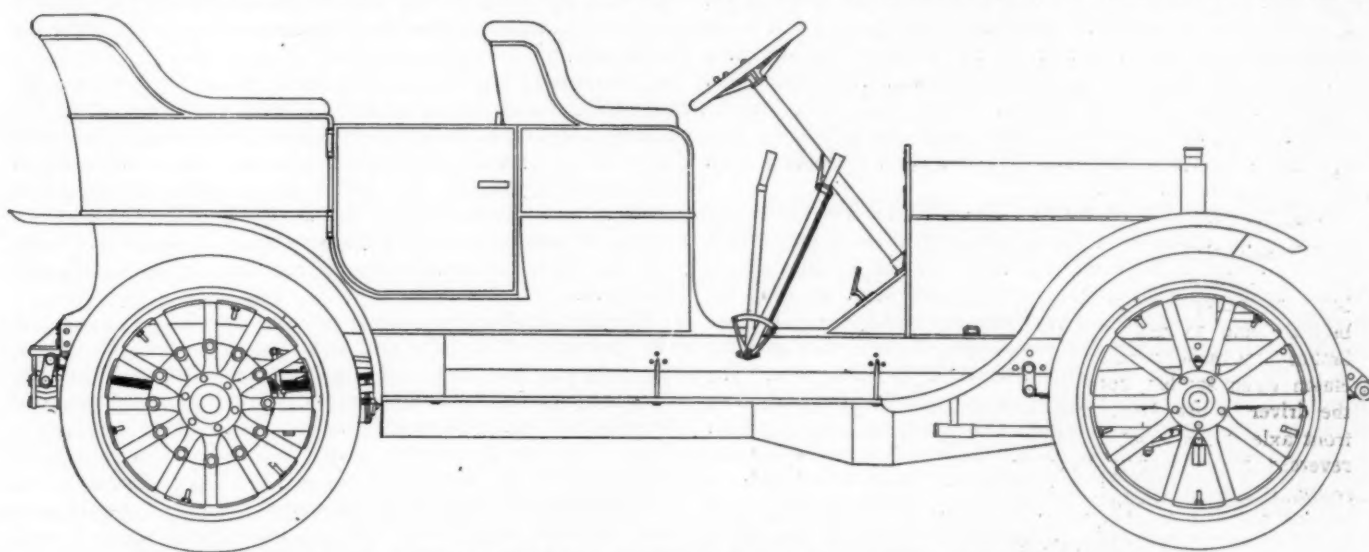
THE PERFECT AUTOMOBILE: A LAYMAN'S IDEA

By G. H. GODLEY.

EVERY automobilist has his own idea of the perfect car, or at least of some parts of it. Many of these ideas are doubtless impracticable, but still there should be a large number of useful ones in the number. This "perfect car" does not lay claim to any deep research or experiment; it is merely a collection of such ideas reduced to paper. There is nothing startlingly original in it, either; the units of engine, gears, and frame are commonplace enough, but have never before, to my knowledge, been combined in just this way.

First to be considered are the general dimensions of the car. The present tendency seems to be toward wheel-bases of ten to eleven feet, thirty-six inch wheels, and motors of forty to sixty horsepower. I am convinced, however, that such cars are out of place on our roads. On rough going they are invariably out-paced by lighter and handier cars, and even under the best conditions, short of a race-track, they are not capable of any speed which a thirty-horsepower machine cannot equal. On hills the large car may have a shade the better of it; but most of our

In the details of the motor it is hard to come to definite conclusions, for the reason that motors as far apart in design as the two poles do their work with apparently the same efficiency and reliability. In this case the aim should be toward simplicity, as it is safe to say that the motor with the fewest parts will cost the least, both originally and for maintenance, and will have the longest life. Of course, the simplest of all motors is the two-cycle, but this, in my estimation, has defects which put it entirely out of the question—chiefly its reliance on the incoming gases to clean out the exhaust, and its use of the crank-case for a pumping cylinder. Granted, then, a four-cylinder, four-cycle engine, I would first offset the cylinders from the crankshaft, securing a more direct downward thrust on the power stroke. Valves should be all on one side, thus dispensing with one camshaft and giving a more compact combustion chamber; and that one side should be the right, because with the centers of the cylinders to the left of the crankshaft this will make the motor more symmetrical, and the cams will be lubricated by



OUTLINE DESIGN OF THE PERFECT CAR, AS EMBODIED IN MR. GODLEY'S APPENDED DESCRIPTION.

hill roads are so crooked and broken with thank-you-ma'ams that it is unsafe to drive at more than a very moderate speed. For average service, then, fifty horsepower has no advantage over thirty. Also it is vastly more expensive in gasoline and tires, as well as in first cost, so that the buyer, for perhaps double the outlay, gets no more than his neighbor with a smaller car, except sheer bulk of steel and aluminum. Therefore my "perfect car" is of thirty horsepower, with a wheelbase of 112 inches and weight (though this of course is uncertain) of not more than 2,300 pounds.

A number of makers are loudly proclaiming that this, too, is to be a six-cylinder year; and doubtless there will be more six-cylinder cars built this year than ever before. But it should be remembered that there will be more four-cylinder cars built, too. I do not deny that the six-cylinder motor has numerous advantages, and I confess I seriously thought of putting one in the "perfect car"—until I began the design. Then I found that a six-cylinder motor 4x4 1-2 inches would take 38 3-4 inches under the hood, while a four cylinder 4 1-2x5 inches only took 30 3-4 inches. To install the six-cylinder motor my 112-inch wheelbase would have to be increased to 120 inches, with a consequent increase of weight and awkwardness. So the "perfect car" retains its four-cylinder motor, with a bore of 4 1-2 inches and stroke 5 inches—dimensions which, by the A. L. A. M. formula at least, should give thirty full horsepower.

the direct splash of the cranks. Cylinders are cast in pairs, as with the modern methods this is no more difficult than casting them separately, and will shorten the motor and simplify both the inlet and exhaust manifolds as well as the water piping.

The carburetor is, of course, automatic, and should have the float concentric with the spraying nozzle; and although I have never had the opportunity to try one, I favor the type with the Venturi tube air passage. Any device which does away with the extra air valve must be at least praiseworthy. The throttle-valve should be of the balanced piston type, and arranged so that when moved beyond the closed position it admits pure air into the cylinders. This is useful when coasting with the engine as brake, as it does not waste gasoline, and prevents the muffler explosions which usually follow when the spark is switched on again.

Ignition is by a magneto generating a low-tension current, with separate timer, spark-coil, and distributor; these are also used for the current from the storage battery, when starting on the spark. I know it is the ordinary practice to furnish two complete ignition outfits, even to the spark-plugs, but this seems unnecessary. It is also likely to make the operator careless, with the result that in a short time neither system is in working order.

A vertical-tube radiator with belt-driven fan, and centrifugal pump takes care of the cooling. The radiator, a modified "Mercedes" in outline, rests on the front cross-member of the

frame. The pump and fan-belt pulley are placed on the same shaft as the magneto, on the left side of the engine, and are driven from the crank-shaft through an idler. For lubrication the familiar one-pump system is used. This is about the simplest method ever devised except the old-fashioned plain splash, and always gives good results. Also it has no adjustments to be tampered with.

The clutch is the old reliable leather-faced cone, brought up-to-date by the addition of cork inserts. The cone proper is of aluminum, made as light as possible to reduce the inertia; and the cork inserts, together with correct proportioning, give a smooth, progressive engagement. This type is much lighter than the multiple-disk, has about five parts to the multiple-disk's fifty, and gives just as good results. From the clutch the power is transmitted from the change-gear on the rear axle by a shaft with two universal joints. As the motor is hung low on the frame, the joints work at a very small angle, and the friction loss in them is almost negligible. I have chosen the shaft drive in preference to the double-chain because it is quieter, more easily protected from dust and mud, and more efficient.

The change-gear is the standard three-speed and reverse selective type. It is placed on the rear axle for the sake of simplicity—one unit in the place of two. The modern change-gear is so light and compact that it hardly seems worth while to put in a sub-frame to carry it separately. The case is cast steel, integral with the central part of the axle housing; the stiffening ribs are on the inside, giving a smooth outer surface which will not collect mud. The change-gear shafts and gears are removable from the front end of the casing, the differential and bevel gears from the rear end. The live shaft is floating, with clutches to drive the hubs.

Both sets of brakes are on the hubs, but use separate drums, one inside the other, those for the contracting emergency brakes being 14 inches in diameter, and those for the expanding foot brakes being 12 inches. This arrangement helps to keep the brakes cool on long hills. The emergency brakes throw out the clutch when applied, but the foot brakes do not, thus enabling the driver to use the motor as a brake at the same time. The front axle is the usual I-section, drop-forged in one piece, with reversed Elliot steering knuckles. The steering gear is of the screw-and-nut type, with a 16-inch hand wheel on which the spark and throttle levers are mounted. Road wheels are 34 inches in diameter, shod with 3 1-2-inch quick-detachable tires in front and 4-inch in rear. Some drivers object to the use of different sized tires on front and rear wheels on the ground that this makes it impossible to exchange the front and rear tires after they are a little worn, in order to obtain more mileage. It does not seem to occur to them that this admission that their rear tires wear out faster than the front ones is the strongest reason why the rear tires should be made larger. As for the necessity of carrying two spare shoes instead of one when touring, personally I carry none at all. They are clumsy and always in the way, and nowadays, with a garage in every county seat, they are never absolutely necessary.

The frame, of course, is channel-section pressed steel, narrowed in front and raised slightly over the rear axle. Springs should be very wide, with a large number of thin leaves. There seems to be a general feeling that two ordinary semi-elliptic springs are not enough for the rear end of the car. Some makers have tried increasing their length, even to as much as 56 inches; others use three-quarter or full elliptics, but I think the best type is the platform. Some good make of shock absorber should be furnished as part of the regular equipment.

In all parts of the chassis vanadium steel should be used wherever desirable. I do not pretend to any very great learning on the subject of alloy steels, but everybody knows that continued vibration will break ordinary steel, no matter how strong in section. Hess-Bright or some equally good type of radial ball-bearing should be used everywhere except in the motor. Several makers put these on crank shafts as well, and they undoubtedly stand up there, but owing to the large sizes necessary they are

too expensive to be considered for a medium-priced car.

The length of the chassis allows 78 3-4 inches from the dash to the center of the rear axle, which is ample for a side entrance body. The car seats five and the tonneau seat is well forward over the axle, which with the platform springs should make it very comfortable. Few cars have any room for baggage, even of the most necessary sort. On a certain medium-priced machine the "baggage compartment" is a hole under the rear seat about two and a half feet long by one foot wide, but as the opening into it is two inches smaller each way it is impossible even to make the best of what little space there is. On the "perfect car" there is room for a trunk 33 inches long, 21 inches wide and 12 inches deep, partly under the rear seat and projecting back flush with the rear cross member. The floor boards both front and rear are of cast aluminum with pyramid surface covered with gray golf-ball paint, replacing dirty carpets and rubber mats. Mud-guards are very full and are joined to the frame or body; aluminum aprons extend between the frame and running boards, so that it is almost impossible for mud to splash upon the passengers. The pan underneath stretches unbroken from the front cross member of the frame to within twenty inches of the rear axle; this not only keeps the machinery clean, but should have a good effect on the amount of dust raised by the car. There are no unsightly boxes on the running boards; the storage battery has a compartment under the footboard, and the tools under the front seat.

For coloring I prefer gray; it wears well, does not show the dirt, and, though this may seem a little far-fetched, I do not believe it frightens horses like brighter colors do. Upholstering may be in dark red or dark green and should be smooth, except for the roll around the back of the seat. Tufted upholstery is hard to keep clean and has not the business-like look of the other. A cape cart top is indispensable on a car for every-day use, and should be included in the regular price with the lamps and horn.

Throughout this description I have tried to keep in mind that the "perfect car" is to be sold at a moderate price. Of course, the only way to tell the price definitely would be to make the car, but if made in sufficient quantities it would seem that these specifications could be carried out for \$2,750. The market for high-priced cars is uncertain at the best, and varies with every fluctuation of the stock market; and it will grow smaller and smaller as buyers come to see the disadvantages of great weight and over-long wheelbases. On the other hand, there is even now a steady demand for a car such as I have described, and I believe it will grow stronger every year.

WHAT BECOMES OF THE POLISHED CHASSIS.

With dozens of highly polished chassis under their eyes, the question is often asked by show patrons as to what becomes of them after the shows. To produce a smooth, mirror-like surface on side frames, cylinders, gear box, and other parts of the mechanical organs of an automobile is a lengthy and costly task, the work in the main being of such a nature that machinery can only be used in a very limited degree. The utility of the mirror polish ceases with the exhibition, special show chassis—unless they are needed for other exhibitions or salesrooms—being sent back to the works to have their polish removed. The chassis is entirely taken to pieces, and each part submitted to sand blast treatment, after which it is painted and finished in regulation style. The smooth, glossy surface of the show machine makes it almost impossible to apply paint satisfactorily; consequently the car must be robbed of all its glitter before it can be given the protective coats of paint with which it will enter into active service.

The buying public demands the opportunity of examining every mechanical part of a car in detail, a fact which is clearly recognized by manufacturers, who do their utmost to educate the unlearned. But as mirror polishing is only labor wasted, it is a pity that fashion should still demand it.

LETTERS INTERESTING AND INSTRUCTIVE

MORE CORRECTIONS ON BATTERY CONNECTIONS.

Editor THE AUTOMOBILE:

[976.]—In your answer to letter No. 921, you say that the No. 2 method of connecting up cells, as shown in cut, has the disadvantage of reducing the voltage at the expense of the current, and thereby greatly shortening the life of the battery. The life of the battery is dependent on the amount of current and the rapidity within certain limits with which it is taken from the battery. The amount of current is dependent on the voltage and the resistance of the circuit. The resistance of the coil part of the circuit is so great as compared to the whole that the circuit resistance is practically the same whether there is one set of four cells in the circuit or two sets (in parallel), and the voltage in the two cases would be the same, hence the amount of current would be the same in each case.

The life of the cells then would really be increased somewhat instead of diminished, because the current would be divided between the two sets, so that it would draw only half as fast from each set while the cells were at work. In my own practice I use twenty cells hooked up with two fives on a side.

W. G. BLISH.

Niles, Mich.

While being entirely in accord with everything you have said in the foregoing letter, we are of the opinion that the statement which caught your attention is substantially correct. If not wholly so, at least in the sense in which it was intended and, we believe, generally understood. Induction coils as generally employed on automobiles are wound to operate on a fraction of an ampere, more or less, at six volts. It was not our intention to have it understood that connecting two sets of four cells in multiple was detrimental, for, as you state, it is a matter of common knowledge that increasing the current by placing two or more sets in parallel connection increases the life of the battery. But no matter how many sets of four are placed in multiple, the voltage will remain the same and the *voltage of four dry cells* is not sufficient to satisfactorily operate a six-volt coil, except when the cells are brand new, and not always then. Six cells are preferable and the sense intended to be conveyed was that it was not practical to run on four even though two sets were placed in multiple. We must admit the language was ambiguous.

QUERIES CONCERNING STEAM TURBINES.

Editor THE AUTOMOBILE:

[968.]—Please answer the following questions through the "Letters Interesting and Instructive" department.

1. Can a 23-inch boiler operate a small turbine with a steam pressure of 400 pounds?

2. Would a small turbine operate a motor boat successfully?

3. Can you give me the address of any concern manufacturing steam turbines?

4. Does any concern manufacture flash boilers and sell them to the trade?

W. & S.

Athol, Mass.

1. If the steam consumption of the turbine be proportioned to that of the generator, there appears to be no reason why it should not operate successfully, though we have never heard of such a high pressure being employed and are under the impression that its use would be practically impossible. Pressures favored by current practice in turbine design range from 70 to 80 pounds, and with such a drop as this, the generator you mention would hardly be capable of supplying sufficient steam.

2. Turbines were first proven successful on small vessels such as torpedo boats, so there seems to be no reason why this should not be the case with a motor boat. It would probably be necessary to use gearing to keep the speed down, as such a small unit as you would employ would have an excessive r.p.m. rate, 4,000 or more. A special propeller would also be necessary.

3. Westinghouse Machine Company, Pittsburgh, Pa.; De Laval Company, Trenton, N. J.

4. You will find the announcements of such makers in our advertising pages.

WANTED, A GOOD GUN-METAL FINISH FOR LAMPS.

Editor THE AUTOMOBILE:

[969.]—Believing that it would be of great interest to many of your readers, I would like to ask if you can offer, through your columns, a formula for gun-metal finish for lamps, and the like. This finish gives a pleasing appearance, and saves a lot of drudgery in the way of polishing.

W. P. ANTHONY.

Eddystone, Pa.

A steel-blue color may be produced on brass by dipping it into a dilute solution of chloride of arsenic, which should be boiling at the time. Or 10 parts of chloride of antimony dissolved in 200 parts of water, in which 30 parts of pure hydrochloric acid have been dissolved. The articles should be dipped until well blued and then washed in clean water and dried in warm sawdust. Black may be produced by coating with a solution of platinum or auric chloride mixed with nitrate of tin. Neither of these is a gun-metal finish, but could probably be made equally attractive and would serve the end in view. The brass should be thoroughly cleaned before undertaking any of these operations, and to do this it would be necessary to dip the articles in a pickling solution composed of one part sulphuric acid to 10 parts water, and washing well before proceeding further. Most of these special finishes are, however, electrolytic, requiring the facilities and skill of an electro-plater to put them on permanently, and we doubt very much if amateur efforts would be entirely a thing of beauty or a joy for any great length of time.

WHICH COMES OUT AHEAD—DOG OR MAN?

Editor THE AUTOMOBILE:

[970.]—I have a few questions for "Letters Interesting and Instructive," as follows:

1. What do you recommend for a non-freezing solution? Would alcohol and water do, without glycerine? If so, what test should the mixture show? Would not such a mixture be less objectionable than one with the glycerine in a car that never runs very hot in the warmest weather?

2. What do you recommend as a brass cleaner and polisher; something that can be easily obtained when none of the prepared solutions are at hand?

3. Would a gill of dry powdered graphite thrown into a planetary gear transmission and sufficient oil added to make a thin paste of it be harmful? I notice that some who recommend the use of graphite seem to advise its use sparingly. Would there be danger of its solidifying or otherwise doing damage in a gear as above?

4. Would some one kindly describe what is most liable to happen when a large dog is run over by a small runabout? While few of us would care to know about this from actual experience, the time is liable to come to any of us any day when driving, when we are called upon to decide immediately between dog and ditch, and as we can tell something about what to expect of the ditch, judging from the size of it, together with our speed, I should like to know something about the dog, from some one else's experience, though perhaps sad it may be to relate.

FRED. D. CLARK.

Prattsburgh, N. Y.

1. For a car which never runs overwarm and on which there is no risk of undue loss from either evaporation or steaming, probably a wood alcohol solution is the best. A 10 per cent solution with water will not freeze down to 15 degrees F.; 15 per cent, 5 degrees F.; 20 per cent, 2 degrees F.; 25 per cent, 0 F. With glycerine and water, solutions of the same percentages give freezing limits of 20, 15, 8 and 5 degrees F., while with calcium chloride these are lowered to 15, 5, 0 and - 0 F., so that the last-named is probably the most efficient for very low temperatures. Both wood alcohol and glycerine affect rubber so that the flexible joints in the circulating system should be watched for disintegration from time to time, but this is not as great a drawback as the risk of forming deposits in the radiator and waterjackets due to the use of calcium chloride, though this is only apt to occur where the water comes to a boil.

2. A saturated solution of table salt in vinegar is a most effective cleanser for brass. Only the liquid should be rubbed

on, as grains of salt carried on the cleaning rag will scratch the metal. This should be thoroughly washed off in warm water and followed by the application of some cleansing paste, or lacking this a coating of vaseline or lubricating oil will serve to keep the lamp bright, though it will also catch a great deal of dust.

3. It would not be advisable to use graphite or any other paste in a small planetary change-speed gear. Any heavy grease or "dope" would lower the efficiency of the gear considerably by creating a great deal of unnecessary resistance to the turning of the pinions in the confined space. Only thin oil such as is ordinarily used for cylinder lubrication should be employed. Makers of such cars usually specify this particularly in their instructions.

4. Though lacking in the requisite personal experience to give a definite answer to your last query, we should certainly have a decided preference for immediate assassination of the dog, no matter how large, rather than try conclusions with any ditch, no matter how small. The effect of taking the ditch is quite well known, as you infer, and it is particularly on that account that we should prefer damaging the dog, as the result, though uncertain, would doubtless be far less harmful. In the Vanderbilt Cup race of two years ago, Lytle in the Pope-Toledo smeared a good-sized Newfoundland over a mile or more of the Jericho Turnpike. But his speed was probably something like eighty miles an hour and the impact did not disturb the driver in the slightest, to judge from appearances. If there is the slightest time for consideration, we should exert every effort to have one front wheel do the business of killing the animal, as was most neatly accomplished by a French driver in a road race a few years ago. He saw the dog in time and probably might have avoided him, but chose to put him under the left front wheel of his car, which was done much as a skilled marksman would hit a bullseye. Neither the driver nor the dog was disturbed in the slightest, for the latter ended his existence so quickly and peacefully as not to know what had happened to him. Both these occurrences were at high speeds, but we should never hesitate to hit the dog rather than take the ditch. The chief danger to be feared is derangement of the steering gear through the collision, and running over the dog neatly by getting him under the wheel is the easiest way to avoid this. Unless the dog was big enough to upset the runabout, or the driver lost control, no unpleasant results should follow, except to the dog.

CAUSE OF A MOST MYSTERIOUS TROUBLE.

Editor THE AUTOMOBILE:

[971.]—The car that I have charge of carries a four-cylinder engine, and some four weeks ago we were overtaken with a knock in the engine. The car was taken to a garage and the rollers on the uplifts were found worn and replaced with new ones, and our knock is gone; but since then we have been troubled with our engine heating. I will tell you just what we have done to locate the cause, all to no avail. We tore down the engine and removed all carbon from the pistons and cylinders, and then drove the car ten or twelve miles, and it was just the same; that is, when we shut off the electricity the engine made several revolutions and then would run backwards two or three revolutions before it would stop. We then looked at the water pump, and the circulation is O. K.; there is no short-circuit anywhere, cylinders are properly lubricated, and the timing is perfect, and we are running on the same mixture that we used before it began to heat, and still it is heating.

Will you kindly let me know what your experienced opinion is in regard to this matter, and as I am just getting into the auto business, it would be a very much appreciated help to me to be able to locate this trouble for my employer.

A. S. BURKE.

Westfield, Mass.

It strikes us as somewhat queer that the trouble having developed immediately after new rollers were put in place, its connection with the latter was never thought of. The fitting of these new parts without in any manner altering the remaining parts with which they work has naturally served to throw the valve timing all out of adjustment. This is evident from the fact that the motor will run backward for several revolutions, as the average automobile motor is not designed to run in more than one direction, usually clockwise. The cams are not ordinarily

designed to permit it to run in the reverse direction, and we doubt if you will find your motor is capable of doing this when in proper adjustment. Assuming the mixture and other adjustments to be correct, it looks as if the exhaust valve were closing too early, thus imprisoning some of the burnt charge and causing the motor to overheat.

ALCOHOL AND KEROSENE AS EMERGENCY FUELS.

Editor THE AUTOMOBILE:

[972.]—Kindly let me know, through "Letters Interesting and Instructive," if a motor car can be run on alcohol or kerosene oil if you run out of gasoline.

H. McKAY.

Philadelphia, Pa.

Either of these fuels may be used in an automobile motor in an emergency, and by creating as far as possible favorable conditions for their employment, the results will be practically as satisfactory as with gasoline, barring the item of consumption, which will be much greater, particularly in the case of alcohol. If the motor be still warm when the lack of further gasoline is discovered, there should be no great difficulty in getting it under way on either kerosene or alcohol, but if allowed to get cold it will not start as easily and it will probably be necessary to warm the carbureter by wrapping it in cloths dipped in hot water, or by filling the cooling system with hot water. The latter should also be so arranged as to have the motor run much hotter than ordinarily, otherwise the amount of power developed on either of these fuels is not apt to be satisfactory, as owing to their heavier nature, more heat is required to vaporize them. The fan might be stopped or other means taken to raise the temperature, as the cooling water should be allowed to almost reach the boiling point in order to obtain the best results.

WANTED—AN AUTOMATIC LEAK STOPPER.

Editor THE AUTOMOBILE:

[973.]—Do you know of anything on the market that will stop a radiator that leaks? Anything that can be put in with the water. If you do, kindly let me know, and oblige.

Constantine, Mich.

WALTER H. CORNELIUS.

Considering the first part of your question alone, we should say "Soldier," but noting the remainder of it, hardly think this answers your query satisfactorily, as lead and water will not mix very well. In case of emergency, a handful of bran will reduce the leak to such proportions that the car may be run without danger, or where very small, will stop it altogether, but aside from this we do not know of any special preparation on the market for this purpose, and should hardly recommend its use, if there were one, as such a repair is merely a makeshift of a very crude type. The only thing to do with a leaky radiator is to have it properly repaired as soon as possible after the leak is discovered in order to prevent further damage, and as it takes a skilled workman to repair a radiator it is advisable not to entrust it to the first tinker as a bungler with the soldering copper can do untold damage to a valuable radiator.

WHAT IS THE TROUBLE WITH THIS COIL?

Editor THE AUTOMOBILE:

[974.]—Can you help me out on the following trouble, with an answer through your valuable paper? I have a two-cylinder spark coil which is missing sparks a great deal. I have bought new sparking points, both tremblers and screws. But it still misses. It is a La Coste coil. No matter how I adjust it, it still misses. Could there be anything the matter with the inside of the coil?

New York City.

F. JACKSON.

There may be considerable the matter with the "insides" of the coil. From the symptoms you give, it would appear that the connections between the ends of the coil, most probably the primary, and the binding posts on the outside of the case, are broken, but not entirely severed, being kept in contact more or less by the insulation, but the jarring of the car knocks them apart at times, which would explain the missing. They resume

action when the wires jar back again into contact, and the number of times that this will occur as well as the length of time that wires will remain in this condition, is amazing, as we have had occasion to learn from personal experience. Such a break in the secondary winding would not be productive of similar symptoms as the current would jump the break and the effect would be merely that of an extra spark gap. It is also possible that the secondary has been burned out and the current only manages to get through occasionally. The thing to do is to consult the coil maker.

HOW ARE TWO-CYCLE MAIN BEARINGS OILED?

Editor THE AUTOMOBILE:

[975.]—I am a constant reader of "The Automobile," and I take the liberty to ask a question through your "Letters Interesting and Instructive." What is the method in general use concerning the lubrication of the crankpin and piston pin of a two-cycle engine of the automobile type? What would be a conservative estimate of the B. H. P. of a 4 x 4 two-cycle three-cylinder automobile engine, ordinary compression at 700 r. p. m.?

G. P. VANCE.

Elwin, Ill.

Mechanical force-feed lubricators with feeds led directly to the bearings and sight-glasses on the dashboard are generally employed for this purpose on two-cycle cars, the same as on others. There is always a small amount of oil in the bottom of the crankcase as in the four-cycle, although the quantity is closely limited owing to the restricted dimensions of this essential. This splashes the crankpin and the sides of the piston that travels below the lower edge of the cylinder; the piston works the oil up and down between itself and the cylinder walls and sufficient of the oil finds its way into the piston pin bearings. A conservative estimate would be 12 to 15 horsepower.

LENGTHENING THE WHEELBASE OF A CAR.

Editor THE AUTOMOBILE:

[976.]—I would like your opinion about lengthening the wheelbase of my Maxwell runabout. I am thinking of putting two full elliptic springs in front and clamping them to the frame back of the radiator. Would the car ride enough easier to pay for the change? I would like to hear from anybody who has made this change.

MAXWELL.

Crestline, O.

The advisability of making such a change depends largely upon the manner in which it is done, as it naturally follows that increasing the wheelbase of such a short car will make it ride much more comfortably. Doubtless there are some readers of THE AUTOMOBILE who can throw more definite light on the matter by giving their personal experience.

WHO INVENTED THE GASOLINE ENGINE?

Editor THE AUTOMOBILE:

[977.]—Wish to ask you who invented gasoline engines.

Parsons, Kansas.

A. M. PAINTER, M.D.

Beau de Rochas is credited with being the first to propose what is known as the compression type of internal combustion motor, making the use of gasoline possible, and Otto was the first to develop it practically, though all engines at that time were run on gas. It is generally conceded that Gottlieb Daimler was the first to successfully employ a liquid fuel in a motor of this kind.

WHO CAN FURNISH THESE MATERIALS?

Editor THE AUTOMOBILE:

[978.]—I have been referred to you regarding parties who furnish blue prints or castings for gasoline engines of the automobile type. I want to buy either a blue print for an engine of 90-100 horsepower or the castings for same in the rough. Also, of whom can I get chassis, bodies, etc.?

UNIVERSITY OF ILLINOIS.

Pontiac, Ill.

We do not know to whom to refer you for the materials you desire, but doubtless our advertising columns, or some of our readers to whose notice your letter comes, may be able to help you out by furnishing the required information.

FORMULAE FOR SOLDERING ALUMINUM.

Editor THE AUTOMOBILE:

[979.]—Kindly give me a formula for soldering aluminum.

Chicago.

GEORGE MALLIN.

Tin 30 parts, zinc 7 parts, aluminum 3-4 part, manganese 1-10 part; or, using chromium with manganese, tin 30 parts, zinc 8 parts, aluminum 1 part, manganese q. s., chromium 1-16 part, the solder being prepared by fusing together the above-named materials. This is a formula on which a patent has been granted in this country but a short time ago. There are a great many others of differing natures extant, but as there is a firm now manufacturing a specially prepared aluminum solder under their own trade name and by a special process, it would doubtless be far better for anyone requiring a small quantity to purchase it, as the materials required would be expensive and difficult to procure. You will find the announcement of the concern in question in our advertising pages.

POWER REQUIRED TO TURN A MOTOR OVER.

Editor THE AUTOMOBILE:

[980.]—I wish to call your attention to an error in the answer to H. C. Arnold (951) which appeared in "The Automobile," issue of November 7.

One horsepower is that power which will raise 550 pounds one foot per second, 33,000 pounds one foot per minute, or 33 pounds one foot in 1-1000 of a minute.

If 2.5 horsepower is consumed in turning an engine under full load it requires the continuous application of 2.5 horsepower to keep the engine moving regardless of the length of time.

The power consumed per revolution should be expressed in foot pounds. One horsepower equals 33 foot pounds per 1-1000 of a minute, or the time required for a revolution, consequently 33 x 2.5 or 82.5 foot pounds are required to make one revolution of the motor.

In experimenting with the Adams-Farwell revolving motor (which is controlled by means of variable compression) the writer has discovered that when using the engine for a brake, an increase in the compression decreases the braking effect of the motor.

This disproves the popular theory that the braking effect of a motor is due chiefly to compression. The fact is, that the gas is heated by compression and expands on the down stroke of the piston giving back a trifle more power than was consumed in compressing it, as long as the engine retains its heat.

When a motor is turned over by hand time is allowed for some leakage past valves and pistons and some power is consumed in friction so that no accurate idea can be gained of the power given back to the piston by the compressed gas.

The braking effect is due to suction, as can easily be demonstrated with any motor controlled by throttle. Closing the throttle increases the braking effect of the motor; whereas, the opposite would be true if increased compression meant increased braking effect.

This suction and braking effect is also present in all throttling engines when running under their own power with a partially closed throttle.

Dubuque, Ia.

THE ADAMS COMPANY,
GLENN MUFFLY.

THINKS GOOD CHAUFFEURS NOT IN DEMAND.

Editor THE AUTOMOBILE:

[981.]—I notice that "Experienced," in letter No. 916, page 428, issue of September 26, says that, taken as a whole, he has quite some faults to find with the automobile game. He is certainly far from wrong in many respects, and while not employed in the same capacities as "Experienced," yet, from a chauffeur's viewpoint, let me cite instances as I have found them.

It has been said the automobile field offers splendid opportunities for young men, and that good chauffeurs are in demand, but this statement is evidently misleading; it certainly has been with me. I find that every place I have made application that they need no drivers. I grew tired of chasing and advertised, answered "ad" after "ad," but to no advantage, and yet I held references as good, if not better, than most fellows hold. But while I do not know how true, however, I have been told on good authority that the recommend of a friend is better than all written references, and I am about ready to believe it.

Now I don't pretend that I know everything about the automobile field, but I do claim that my experience on the road has taught me more practical pointers than could ever be gained in a shop or school. It is not for the mere pleasure of driving that I chose automobile work, but as a means of earning a livelihood, and yet to me it seems that I have chosen the wrong calling.

Roselle Park, N. J.

G. F. JACKSON.



TYPICAL BRIDGE IN HEART OF THE CATSKILLS, WHICH PRESENT PICTURESQUE SCENERY WORTH STRUGGLING TO REACH.

AUTOMOBILE'S UTILITY.

In the early days of automobil- ing it was a source of satisfaction to have the motor-driven vehicle proceed at a reasonable pace over the best of highways. Nowadays traveling of the most extraor- dinary sort is asked and invariably the most difficult conditions are successfully coped with, even though it be over mere apologies for roads and often no roads at all.

Recently H. A. Grant made a hunting trip which took him and his companions into the heart of the Catskill Mountains. A 36-horsepower Maxwell was converted into a runabout, and the car supplied ample power for all necessities encountered during the trying trip, a good part of the 600 miles consisting of mighty poor traveling surface, and at times the going was sufficient to tax even the proverbial Western



STARTING UP CROSS MOUNTAIN FOR HARD CLIMB.

broncho that can ascend a mountainside.

Included was a climb of Cross Mountain, which to the best knowledge of Mr. Grant had never been successfully attempted before by an automobile.

Finally the exploring craft made its way into the woods just as far as its pilot could drive it. It would have been necessary to blaze a path with the swinging of axes before any further progress could be accomplished.

When one goes out of the beaten path he must needs keep in mind a source of replenish- ment for his gasoline tank, for the product of the Standard trust is still a requisite for most satis- factory progress. However, with the automobile appearing now- days in most unexpected quarters, the backwoods storekeeper gener- ally has gasoline for sale.



IN THE HEART OF THE WOODS, WHERE FURTHER PROGRESS WAS MADE IMPOSSIBLE BY DENSE FOREST AND ABSENCE OF ROAD.

AN UNBIASED COMPARISON OF THE FOUR AND SIX

By GLENN MUFFLY, THE ADAMS COMPANY.

BEING interested in the manufacture of the only five-cylinder motors on the market, we are in position to give an unbiased opinion on the relative merits of four and six-cylinder motors. The recent articles by F. B. Stearns and the Winton Motor Carriage Company have interested us to the extent that we hereby volunteer a few remarks which may be new to some readers. Let it be said before starting that any number of cylinders up to nine or ten could be used on our revolving motor without addition to the electrical or valve-operating devices. We chose five as the least number of cylinders on which the power strokes overlap.

The principal weak points of the ordinary four-cylinder motor are that the power strokes do not overlap, and at the very time that no power is being generated, the flywheel must be robbed of enough inertia to stop and start all of the pistons. Also the maximum compression comes at a point where the force of the preceding explosion is entirely spent. The six overcomes these difficulties, but loses a point at the same time. In the four-cylinder the pistons are accelerated by the crankshaft at the time of highest explosive pressure, and return part of this inertia to the crankshaft during the latter half of the stroke, as the explosive pressure diminishes. This means that the power transmitted to the crankshaft of the four-cylinder is more uniformly distributed over the effective part of the explosion stroke than in the six. However, the fact still remains that during a brief period of time (about 1-10 of a revolution, or 1-50 of a second at 300 r.p.m.) no power is being generated by the four-cylinder motor. This is not serious, except when taken in conjunction with the above fact that during this interval between power strokes an extra load is imposed upon the flywheel in the form of inertia and compression.

That the weakness of the four-cylinder motor is due to the power consumed in overcoming inertia, and not to the interval between effective power strokes, is proven by the fact that the old Adams-Farwell three-cylinder motor, not having any reciprocating parts, will pull a load at a slower motor speed than is possible with the usual four-cylinder type, in spite of the longer interval between explosions. More power is wasted in overcoming inertia in the six-cylinder type, but only two pistons stop at the same time, and that, while an explosion is taking place, so that the six runs smoother than the four. The difference is not noticeable except at slow speeds, but as slow motor speed is greatly to be desired the six is superior to the four.

Again, it can be shown that considerable power is consumed in overcoming inertia, as the five-cylinder Adams-Farwell will pull a load at a slower motor speed than is possible with the ordinary six-cylinder. The advantage gained by eliminating reciprocating parts overbalances the difference in the frequency of impulses. The revolving motor is also aided by a much heavier flywheel, as practically the entire motor revolves about a stationary shaft. A cylinder of a given size will develop the same amount of power whether working alone or in a set of six, other conditions being equal. In fact, the more frequent

impulses being conducive to steady running should increase the efficiency of the multiple-cylinder motor. Theory and practice do not always agree, chiefly because the theory is not complete.

Here are a few points to be considered by the advocate of many cylinders: The power from the cylinder next to the load is transmitted through two bends in the crankshaft and one bearing; the power from the next cylinder is transmitted through six bends and two bearings; the third through ten bends and three bearings; the sixth cylinder must transmit its power through twenty-two bends and six bearings. It is not hard to conceive of a motor so long that the power from the cylinder farthest from the load would be entirely consumed in transmission. In four-cylinder stationary power-plants it is customary to apply the load to the middle of the crankshaft. A six-cylinder crankshaft with the driving pulley on one end would call forth severe criticism from designers of stationary engines, who must consider efficiency more carefully than do makers of automobile motors.

It is claimed that the constant suction of the six-cylinder motor aids carburetion. This may be so, but constant suction means that a partial vacuum is constantly maintained in the intake manifold, thus reducing the charge admitted to the cylinders and retarding the piston on the suction stroke. In the four-cylinder motor, the gas in the inlet pipe attains considerable velocity before the end of the suction stroke, and as the piston speed decreases, this velocity aids in ramming the cylinder full of gas. On the other hand, as the end of the suction stroke is approached in the six, another cylinder starts drawing in a charge, thus reducing the pressure within the manifold in spite of designs calculated to prevent it. Some six-cylinder motors have been found to give better results when equipped with two carbureters to overcome this difficulty.

A defender of the six-cylinder type says: "Radiating surface increases as the square, whereas cylinder volume—horsepower—increases as the cube." This calls attention to the fact that more heat units are lost through the cylinder walls of the six than through the walls of a four-cylinder of equal horsepower. As timing gears are set by some one cylinder, we do not see what difference it would make to the mechanic how many cylinders the motor had. As for grinding valves, cleaning spark plugs and looking for knocks or short-circuits, there is no reason why a four-cylinder man could not do the work on a six, but, of course, 50 per cent. more time would be required. We heartily agree with F. B. Stearns in his statement that passengers and motor should be carried between the axles, but think his comparison of a four-cylinder gasoline motor to a four-cylinder steam engine a little overdrawn. We believe, however, that a four-cylinder motor with a liberal flywheel is preferable to the six, unless it is for a high-powered machine with small seating capacity. Personal prejudice may influence the writer in favor of the revolving five-cylinder, but probably there is some reason for being prejudiced in favor of a motor that rivals the six in constant torque and the single-cylinder in simplicity.

THE FOUR CYLINDER MOTOR, THE ENDURING TYPE

By C. F. REDDEN, STUDEBAKER BROS. COMPANY.

THERE has been recently a lively discussion by the advocates of four and six-cylinder engines. It is interesting to trace the development of the modern internal-combustion motor from the original single-cylinder to the multiple-cylinder of the present day. When the automobile was in its infancy, the single-cylinder motor was popular; first, because of its simplicity, and, second, because it was easy to manufacture and most economical to run.

This type, while highly satisfactory from the standpoint of reliability, was objectionable on account of excessive vibration. With the advent of the two-cylinder motor a large amount of this vibration was eliminated, but not all. Both the three-cylinder and four-cylinder motors were built, the three-cylinder surviving but a very short time, not so much on account of imperfect balance as on account of difficulty of manufacture. The four-

cylinder motor has become standard because it produces a smooth-running engine with a minimum of complications. The six-cylinder advocate points out that if the two-cylinder is better than the one and the four better than the two, that it is only logical the six should be better than the four, but this does not necessarily follow. Reasoning this way, it might be pointed out that the eight or twelve cylinder is better than the six, but in the manufacturing of every article a certain standard is attained which practice and experience have shown to be most satisfactory, and beyond which no great advantage is obtainable.

It seems to me that the logical way to look at the matter is that the power required necessarily governs the number of cylinders. It has been proven by experience, and designers are generally

agreed, that a 5x5 or a 5 1-2x6-inch cylinder is about the maximum that it is advisable to make. Therefore, for cars up to 40 or even 50 horsepower the four-cylinder motor fulfills every requirement, while for an engine rated at, say 70 horsepower, it is perhaps advisable, though not necessary, to increase the number of cylinders in order that each separate unit may not be too large. I am fully convinced that the standard touring car of the present time, as well as the future, will be fitted with a four-cylinder motor of approximately 40 horsepower. This type of motor car will appeal to a large conservative class of buyers with the wish to use their cars as distinct utilities and who are not affected by fad or fancy, and who are also quite averse to paying for the needless carrying of weight or burning of fuel.

EVOLUTION FROM A MOTORETTE TO A SIX-CYLINDER

By DAVID FERGUSON, CHIEF ENGINEER OF THE GEORGE N. PIERCE COMPANY

AN honest tale speaks best being plainly told. Briefly, the history of Pierce construction is as follows: In 1900 the Pan-American Fair year, we showed for the first time at the Buffalo Fair, and in the first Madison Square Garden Show, what we then termed a motorette. It was fitted with a 2 3-4-horsepower DeDion motor, of the single-cylinder vertical type, carried in the rear. The change-speed transmission was of the planetary type, and then spur geared driven to the axle.

Our next type was called the stanhope model, and these we then made 3 1-2, 5, 6, and 8 horsepower. They were all of the single-cylinder motor style, with the motor in the rear, the making of which we have since abandoned.

Five years ago we produced a 15-horsepower car, with a vertical motor in front, following the then French practice which had just come into vogue. This car had clash gears, and was bevel driven. The bevel gear drive, which is new to some makers, has been used by us ever since that time.

Four years ago we produced our first four-cylinder "Great Arrow" car, and still continue to produce that type. In 1906 the first six-cylinder "Great Arrows" were produced. Every type car we have ever made has had, for convenience sake, the change-speed lever on the steering column, the only side lever to be found on Pierce cars is that used for the emergency brake.

I strongly advocate, as the result of experience, the use of the six-cylinder car because it is the ideal car for the man who wants the best, and who is willing to pay for it. Of course, for the man who wants to save money in the purchase of his car the four-cylinder will fill the bill. There is no question in my mind but what the six-cylinder car, as I have said before, is perfectly ideal. It is quiet, easy on the transmission, easy on the tires,

and, because it can be nearly always run on the top gear, we fit it with only three speeds. Three speeds is enough because the direct drive is on the high. There is very little use or need for the low speed anywhere, except in mountain climbing.

Two and four-cycle motors have always produced satisfactory results. The six-cycle motor did not produce very good results in stationary practice in England, according to my observations. A cylinder-fired hydro-carbon motor is really a heat motor, and the conservation of heat is the conservation of energy. A six-cycle motor, with its air cooling charge, might cool a motor too much and lower the temperature of the cooling water below 100 degrees, which is impracticable.

I should regard the gas turbine as the final and last word in gas engine practice, because all the cycle phases are reached in that practice. In the present state of the art, the six-cylinder motor is better than any other multiple type, excepting some other multiple having six as its factor, such as twelve, eighteen, twenty-four, thirty, and, finally, thirty-six, the full degrees of the circle. Anything above six-cylinder is too long for an automobile chassis.

Thirty-six-inch wheels and tires seem now to be the ultimate thing, being the happy medium between the twenty-eight-inch bicycle wheel and the forty-four-inch carriage wheel, for tests have shown that any further increase in the size of wheels show a gain only measured by a decimal point.

The forward position of the motor on the chassis in line with the front axle has the merit of distributing the weight between the two axles and also makes for easy steering, and, hence, I do not see any chance for a further shifting about of the power plant from its present well-established position.

PREDICTS SIX CYLINDERS FOR ALL BIG CARS

THE six-cylinder automobile is destined to become a predominant type for high-power machines, according to H. H. Franklin, who gives his opinion as follows:

"In two years practically all automobiles over 40 horsepower will be of the six-cylinder type. Below that horsepower they will be of the four-cylinder type, except in the cheap grade automobiles, which will employ one and two-cylinder motors.

"This does not mean, as it might first appear, that the six-cylinder automobile is going to predominate. The predominating automobile will be of small and of light weight and its horsepower will be under 40.

"The six-cylinder automobile, properly built and designed, is, power for power, lighter and cheaper to build than the four-cylinder. It is easier on tires, easier on the transmission and all the mechanism. Because of the smaller diameter of the flywheel there is more ground clearance. The advantage of this, however, is probably offset by the necessary increase in the wheelbase. The six-cylinder automobile, power for power, is more econom-

ical than the four-cylinder. The six-cylinder automobile as it is now being made is too big and too heavy. Manufacturers have added to the already excessive power and weight. This is a great mistake.

"What is wanted is high power with light weight, not high power with excessive weight and bulkiness. The six-cylinder construction offers just what is wanted in that high power can be obtained with less weight and less expense than with four cylinders, but the manufacturers have not done this.

"I predict that within two years the weight of six-cylinder automobiles will have been greatly reduced and a 40 six-cylinder water-cooled automobile will weigh about three thousand pounds, and in due time even less than that. The Franklin air-cooled automobile of 42 horsepower weighs only 2,500 pounds.

"The six-cylinder automobile is very satisfactory to operate. It has that pleasurable, smooth-feeling pull, with an entire absence of jar or jerk. It is a better machine to run slowly, due to the six impulses or steady torque, and it requires vastly less work on the part of the driver, owing to the infrequent necessity for gear-changing."

WHAT SOME OF THE AUTO CLUBS ARE DOING

OHIO'S ENTERPRISING CLUB AT CHILLICOTHE.

CHILLICOTHE, O., Nov. 18.—One of the liveliest and most progressive automobile clubs in the Middle West is that organized at Chillicothe a short time ago. It has already a very large membership and is rapidly growing. The intention is to give a series of runs during the coming season. The first of these proved most successful, fifteen cars being entered. Silver cups were awarded for the first and second prize, the first prize being captured by Walter Barret with a Reo, and the second by Joseph Atwell with a Pope-Toledo. The run was followed by an informal luncheon at the club's headquarters.

As Chillicothe is the home of the Logan Construction Company, there were naturally a number of Logans in the tour, as will be seen in the accompanying photograph.

The idea of the club in giving these tours is not to attain neck-break speed, or to impose conditions which would make the tours irksome to the contestants. It is intended to make the conditions such that the tours will be pleasant excursions and are designed more to bring the autoists of Southern Ohio into close and

ANNUAL ELECTION OF THE CHICAGO A. C.

CHICAGO, Nov. 18.—There was no opposition ticket in the field in the recent election of the Chicago Automobile Club, and therefore these were the unanimous selections of the members: President, Ira M. Cobe; first vice-president, F. H. Pietsch; second vice-president, T. J. Hyman; secretary, N. H. Van Sicklen; treasurer, C. E. Gregory; directors, John Farson, Claude Seymour, T. J. Koehler, F. D. Countess, A. J. Banta, and Walden W. Shaw.

During the past year 105 active members have been added to the membership list, giving a total of 582 members, 478 of which are active, 96 non-resident, 5 life, and 3 honorary. The membership dues were increased from \$50 to \$60 a year, the initiation fee being left at \$100. There is agitation for an auxiliary membership, but the impression prevails that there would be considerable difficulty in working out a successful scheme of this sort.

It is possible that the annual banquet of the Chicago Automobile Trades Association, scheduled to take place the evening before the opening of the Chicago show, may be held in the clubhouse of the Chicago Automobile Club. It is a question,



HOW THE CARS LINED UP FOR THE FIRST TOUR OF THE CHILLICOTHE AUTOMOBILE CLUB.

friendly association than to impose straining conditions on the cars entered. It is required, of course, that all cars be driven by the tourers, and no professional chauffeurs are permitted in any of the contests, the idea being to enable the car owner to demonstrate his proficiency at the wheel.

A. C. OF WASHINGTON WANTS BIG MEMBERSHIP.

WASHINGTON, D. C., Nov. 18.—The social season of the Automobile Club of Washington was auspiciously opened Saturday evening with a smoker at the clubhouse on the Brightwood road. Several hundred members and their friends enjoyed a good vaudeville program arranged by the house committee. The committee has a number of good things in hand for the members during the next few weeks.

A meeting of the club was held Wednesday evening, November 13, and steps were taken to reduce the initiation fee to \$10, and the yearly dues to the same figure. By this means it is hoped to take a hundred or more new members. The club is in good condition and is wielding considerable influence in local automobile affairs. The social season promises to be unusually active this winter. The opening of Congress a few weeks hence brings to Washington an increasing number of autoists among the statesmen, a large proportion of whom own cars.

however, as to whether the large attendance could be accommodated in the grill room of the club. The board of directors has tendered the use of the club house to the trade association, and the matter of holding the banquet there will be settled in a few days.

YORK (PA.) ENTERTAINS TOURING PARTIES.

YORK, PA., Nov. 18.—Since the announcement has been made that the Motor Club of Harrisburg will hold another endurance run next spring, local autoists are wideawake and have proposed a joint run with the Capital City enthusiasts. The run will be held early in the spring, and from present indications promises to be a bigger success than last May.

Although the weather is just a trifle cool, it has no effect upon the autoists in this locality. Touring parties from all parts of the East continue to stop in this city on their runs to and from the battlefield at Gettysburg, and nearly every night sees a half dozen or so big touring cars stored in the local garages.

During the past week scores of York autoists attended the annual show at Philadelphia. The Quaker City display was voted a grand success by the local contingent, and naturally more than ordinary interest was centered in the exhibition of the York Motor Car Company, makers of the Pullman cars. The Pull-



SANTA BARBARA, CAL., A WINTER AUTOING PARADISE.

W. A. Wishart and party of Oakland, Cal., in an Acme Car, in front of the Hotel Potter, at Santa Barbara.

man display and demonstration cars were returned over the road to York yesterday and will probably be sent to the Baltimore show.

DELAWARE A. A. IS INCREASING IN MEMBERSHIP.

WILMINGTON, DEL., Nov. 18.—The Delaware Automobile Association has complained to the authorities about glass in the streets of Wilmington, caused by milkmen allowing bottles to fall and break. The association contemplates requesting the Wilmington & Kennett Turnpike Co. to sprinkle its roadway in summer. The association is making arrangements to get out a road book, which will show all of the roads in this section and will contain much other information, including the names of the members.

Arrangements are being made to place signposts at road intersections in the vicinity of Wilmington, which are now lacking at many points. The association now has a membership which includes about one-third of the automobile owners in the State, and it is growing.

BAY STATE A. A. ESTABLISHES A BILLIARD ROOM.

BOSTON, Nov. 18.—At the monthly meeting of the board of directors of the Bay State Automobile Association held last week, much business pertaining to the organization was considered and transacted. The board took action on several measures which will prove of material value to the organization in the very near future, one of the most important of which was the determination to establish a billiard and pool room. The parlor on the second floor, once known as the ladies' reception room, is now to be turned into headquarters for those who delight in chasing the ivories over the green.

"TUESDAY NIGHT" AT THE A. C. OF AMERICA.

NEW YORK, Nov. 19.—The regular Tuesday night at the Automobile Club of America consisted of an interesting illustrated lecture, "The Federation of the World," by Hamilton Holt, managing editor of the *Independent*. Mr. Holt attended the Peace Conference at The Hague and is thoroughly familiar with the subject. Many members attended, not a few of whom participated in the club dinner which preceded the entertainment.

DECEMBER 6 ANNUAL DINNER OF L. I. A. C.

BROOKLYN, N. Y., Nov. 18.—The annual dinner and vaudeville show of the Long Island Automobile Club is set for Friday evening, December 6, and all members are requested by Edwin Melvin, chairman of the dinner committee, to keep the date in mind and arrange affairs so as to be able to attend. Detailed information will be made public later. Several notable speakers are expected to attend.

THE AUTOMOBILE CALENDAR. AMERICAN.

Shows and Meetings.

- Nov. 30-Dec. 7.—Chicago, Coliseum and First Regt. Armory, Eighth Annual National Automobile Show, and First Annual Commercial Vehicle Show, National Association of Automobile Manufacturers.
- Dec. 9-14.....—Detroit, Riverview Park Auditorium, Detroit Automobile Dealers' Association. LeRoy Pelletier, manager.
- Dec. 14-21.....—St. Louis, Mo., Jai Alai Building, Second Annual Auto Show, St. Louis Automobile Manufacturers' and Dealers' Association. D. M. Strauss, manager.
- Dec. 28-Jan. 4.—New York City, Madison Square Garden, Importers' Salon. C. R. Mabley, manager.
- Jan. 14-18.....—Hartford, Conn., Foot Guard Hall, Hartford Automobile Dealers' Association.
- Feb. 1-8.....—Providence, State Armory, Automobile Show. Frank M. Prescott, manager.
- Feb. 10-15.....—Detroit, Light Guard Armory, Tri-State Automobile and Sporting Goods Association, Seventh Annual Show.
- Feb. 17-22.....—Cleveland, Central Armory, Annual Show, Cleveland Automobile Dealers' Association. George Collister, manager.
- Mar. 7-14.....—Boston, Mechanics' Building and Horticultural Hall, Boston Automobile Dealers' Association. Chester I. Campbell, manager, 5 Park Square.
- Mar. 9-14.....—Buffalo, Convention Hall, Sixth Annual Automobile Show, Automobile Club of Buffalo. Dal H. Lewis, manager.
- Mar. 21-28.....—Toronto, Canada, St. Lawrence Arena, Automobile Show. R. M. Jaffray, manager.
- Apr. 5-12.....—Montreal, Canada, Arena, Third Annual Automobile and Sportsman's Show. R. M. Jaffray, Mgr.

Motor Boat Shows.

- Dec. 7-14.....—New York City, Grand Central Palace, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 1-8.....—Chicago, Coliseum, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Jan. 25-Feb. 1.—Boston, Mechanics' Building, National Association of Engine and Boat Manufacturers. Chester I. Campbell, manager, 5 Park Square, Boston.
- Feb. 3-8.....—Buffalo, Convention Hall, First Annual Power Boat and Sportsman's Show, auspices of Buffalo Launch Club. Dal H. Lewis, manager.
- Feb. 20-Mar. 7.—New York City, Madison Square Garden, Fourteenth Annual Motor Boat and Sportsman's Show.

Races, Hill-Climbs, Etc.

- Nov. 26-28.....—Chicago, Three-day 600-mile Reliability Race, Chicago Motor Club.

FOREIGN.

Shows.

- Nov. 12-Dec. 1.—Paris, Exposition Decennale de l'Automobile, Grand Palais, Esplanade des Invalides, Automobile Club of France.
- Nov. 22-30.....—London, Agricultural Hall, Stanley Show.
- Dec. 5-22.....—Berlin, Germany, Automobile Show.
- Dec. 21-Jan. 2.—Brussels, Show, Palace of the Cinquantenaire.
- Jan. 18-Feb. 2, '08—Turin, Italy, Fifth International Automobile Exhibition, Palace of Fine Arts, Valentino Park, Automobile Club of Turin.
- Mar. 21-28.....—London, Agricultural Hall, Cordingley's Show.

Races, Hill-Climbs, Etc.

- Dec. 8.....—Paris, Straightaway Aeroplane Speed Test, auspices of "L'Auto."
- Dec. 8.....—Paris, Break-down Competition, auspices of "L'Auto."
- May, 1908.....—Paris, Competition for Agricultural Automobiles, auspices of "L'Auto." (Exact date to be announced.)
- May 12, 1908....—Sicily, Targa Florio, Automobile Club of Italy.
- June 20-July 5.—Grand Prix, Dieppe Circuit, Automobile Club of France. (Exact date to be announced.)
- August, 1908....—France, Coupe de la Presse, Automobile Club of France. (Exact date to be announced.)

MAINE'S GROWING WORTH AS AN AUTO STATE

PORTLAND, ME., Nov. 11.—No better proof of the growth of the automobile industry in Maine can be obtained than that furnished by the Secretary of State at Augusta. Registration of automobiles is still going on, though it is about over for the season. The registration law went into effect in this State in 1905, and since that time 2,221 numbers have been issued to owners of cars in Maine. The totals for the three years in which the law has been in effect show that more machines have been registered this year than during any of the previous years. In 1905 the number of automobiles registered was 736, while in 1906 there were 649 registered, showing a falling off of 87 compared with the business of the preceding year. The number registered to date in 1907 is 836, showing a gain of an even hundred over the business of the first year. The number of automobiles registered during October was 41, the number of licenses issued to operators 48, with a total of 2,616, and the number of motorcycles registered 4, with a total of 228.

Automobile agents in Portland report that the past season was the most successful in the history of the industry in this State. Portland is the distributing point for Maine and the majority of the cars coming here have to pass through this city. The demand during the whole of the season has been great and conservative business men, the last whom one would think would take up the sport, have come forward and purchased high-priced cars.

During next season there will not be as many agencies in Portland, but those that will be here are well backed financially and form the backbone of the industry here. The Spear Auto Company has just been organized to handle the Ford cars. Albert M. Spear, Jr., is the manager of the concern. Mr. Spear is practically the pioneer in the business in Maine. He first handled automobiles for the F. B. Bailey Co. He was later identified with the Maine Motor Carriage Company for several years, and last year he was the manager for the J. A. Dowling agency. He has now branched out in business for himself and the indications point to a successful year.

The other agencies in Portland and the cars they will handle during 1908 as far as the stock has been selected are:

J. A. Dowling, Thomas; Maine Motor Carriage Company, Stevens-Duryea, Peerless, and Pope-Hartford; Stoughton & Folkins Company, Maxwell; Herbert A. Harmon, White Steamer; Stranahan-Eldridge Company, Buick; F. A. Nickerson, Pierce Great Arrow; L. C. Gilson Company, Stanley and Reo; The Swan Company, Cadillac.

During the past season more visitors have come to the State of Maine than during any other year. Conservative estimates place the number of out-of-the-State callers at 2,500. Practically all of these have represented the richest men in the great cities who have been on their way to the Maine summer resorts of the State. The coming of fall saw little diminution in the numbers, hundreds coming to take advantage of the excellent hunting.

Though the third annual automobile and power boat show of Portland is still four months off, exhibitors are already being hard-pressed to secure space. The show will be held at the Portland Auditorium during the week beginning February 24 and will, as in past years, be under the direction of Frederick M. Prescott, of Boston. The exhibition for 1908 promises to be the biggest and best the city has yet had and the decorations for the event will be elaborate in the extreme.

CHEMICAL AUTO ENGINE FOR BRIDGEPORT.

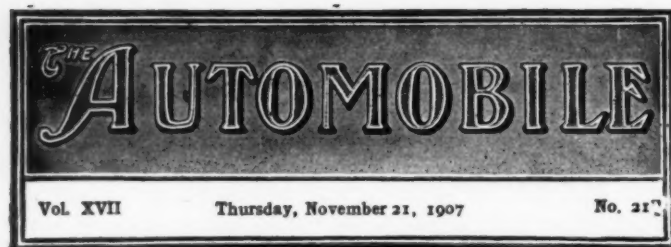
BRIDGEPORT, CONN., Nov. 18.—Within the next two weeks the big Locomobile chemical engine, built by the Locomobile Company for the city of Bridgeport, will be completed. The body was designed and built by the Bridgeport Vehicle Company and is ready for mounting on the chassis. The new chemical fire engine will make its trial trip through the streets of Bridgeport as soon as completed, and it is confidently anticipated that its success will bring about the adoption of other auto fire-fighting apparatus.

PASSING OF THE HORSE ILLUSTRATED.

Ever since there has been such a thing as an automobile, the ultimate passing of the horse has been freely predicted, and the fulfillment of the prophecy, as illustrated by the sight of a horse towing a broken-down car home, has furnished abundant copy for the cartoonist. To turn the tables, the Studebaker Brothers Company recently adopted the novel expedient shown by the accompanying photograph. Three big Studebaker electric trucks were each loaded with a team of heavy truck horses and their usual burden pulled behind. In this manner, the novel cavalcade paraded the length of Broadway from Forty-eighth street to the Battery, and the procession, together with the moral it so pointedly illustrated, attracted no end of attention along the route. As a wind-up to the parade, the 3 1-2-ton trucks were delivered to the H. B. Claflin Company, which makes a total of six vehicles of this size and make now employed by the latter firm.



START OF THE PARADE OF STUDEBAKER AUTOMOBILE TRUCKS THAT RECENTLY ATTRACTED SO MUCH ATTENTION ON BROADWAY



THE CLASS JOURNAL COMPANY

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Are Six-Cylinder Cars Striking Wide of the Mark?

Whatever may be the merits of the six-cylinder motor, as compared with the four, it is quite plain that merely tacking an extra pair of cylinders on the existing four-cylinder engine is not the most efficient means of taking advantage of these benefits. And this is exactly what the majority of builders of six-cylinder models for the coming season have done. Granted that the extra flexibility, smoothness of running, and capacity for taking grades with less gear-changing compensate for the extra mechanism involved, it can hardly be said that this forms a sufficient reason for making the six-cylinder car a ponderous creation that well merits the title of road locomotive. But this is what the average builder who is marketing a car of this type is making of it, in support of which it may be mentioned that the majority of the six-cylinder cars revealed at the shows in New York City averaged 70 to 90 horsepower. They were rated far more conservatively than this, of course, but nominal ratings do not alter the facts. The reason for this is equally plain, as most of the makers are still in more or less of a quandary regarding the six-cylinder car. They feel certain that there will be a demand for it, but do not wish to go to any unnecessary expense in placing themselves in a position to take advantage of this demand. If the six-cylinder type is the car of the future and is destined to eventually supplant the four, as so many believe, then some of the present developments along this line certainly seem designed to place that day further off, rather than to bring it nearer.

A Vital Lesson from the European Situation.

One thing which stands out unmistakably clear in the European shake-up—variously designated as crash, revolution, evolution, and dull season—is the disfavor into which the high-powered car has fallen. Enter any French or Italian factory producing both large and small models, ask for a \$7,000 60-horsepower car, and it will be produced on the spot. But state that your wants are a modest 16-20-horsepower chassis, and although you may offer spot cash you will be asked to wait a few weeks for delivery.

Most significant is the fact that instead of being a temporary glut due to overestimation of the possible number of users of automobiles, the slump is the outcome of the decision of the automobile public that there is little need for high-powered cars. From the early days when a single cylinder under a big bonnet developed eight horsepower users have been led on to twos, fours, and sixes, each season's car bigger and more powerful than its predecessor, until all natural requirements have been surpassed. The number of persons capable of purchasing powerful road locomotives has not decreased, but the number of those willing to face the maintenance expenses of a "sixty" when a "twenty" will meet all natural requirements is not as large as it used to be, as European constructors are finding out to their cost.

In this connection there is a significant story in the report of the Royal Automobile Club of Great Britain on the 15,000-mile journey of the Hotchkiss six-cylinder car. Tire expenses worked out at the rate of twelve cents a mile; gasoline consumption was not better than 7 1-2 miles to the gallon, tires and gasoline together approximating sixteen cents per mile. This does not substantiate the theory of advocates of six-cylinder cars that the smoother-running engine diminishes wear of tires, nor is any consolation to be found in the plea that the car is not one of the best of its class.

There will always be a certain demand for powerful engines for elaborate closed touring cars and for the special use of speed lovers, but America will find, as Europe has already discovered—and that at no distant date—that the popularity of the monster has gone. With the lesson before them, it is to be hoped that home constructors will be better prepared to meet this phase of evolution than their confrères on the other side of the Atlantic.



Overwhelming Influence of Fashion on Auto Design.

If there be any one thing of current production on which the influence of fashion would be regarded generally as a minus quantity, machinery would most naturally be accorded that distinction. It is nothing strange that fashion should dictate body lines, upholstery, or the details of finish, but that its influence is much more far-reaching than these purely non-technical matters must be evident to anyone who has observed the trend of design during the past few years. Three years ago there were a number of makers who had evolved systems embodying numerous special features of design, on which they dwelt at great length and to which were ascribed many, if not all, of the superior points offered by their productions. Observation brings to light the fact that many of these have gone by the board in the interim, so that the numerous distinctive features which formerly served to identify such cars have, in the 1908 models, been completely overshadowed by the demand for a machine that shall conform as closely as possible to the dictates of fashion.

Not that these particular details of design and construction were lacking in merit—probably the truth of the matter would show them to have been quite the contrary in some instances—but they had the fatal defect of not conforming to what the automobile buyer has come to consider as a standard. On the other hand, many of them were nothing more than talking points, and as such deserved to be eliminated, as the car was better without them. It is not to be presumed from this, however, that American cars, one and all, have settled down to a single standard, but the trend is a striking illustration of the influence of fashion on something generally considered beyond its pale.

SUCCESSFUL OPENING OF THE BALTIMORE SHOW

BALTIMORE, Nov. 18.—Shortly after eight o'clock on Saturday night, Baltimore's third annual automobile show was opened to the public in the hall and warerooms adjoining the garage on Mt. Royal avenue, the scene of the first and most successful show ever held in Baltimore. Only about half the cars to be exhibited had arrived, and it was not until Sunday night that five carloads of exhibits arrived from the Philadelphia show, which were soon placed in shape by a gang of workmen.

Despite the absence of the chief exhibits from Philadelphia, the opening night was a successful one, and a large audience inspected the machines and the accessory departments. This year there have been many new features added to the show. Profuse decorations—bunting and flags—make an attractive setting for the big machines, while a concert is rendered each day and

evening by a concealed orchestra. One of the features of the show was the Winton and Maxwell exhibits, which arrived Sunday night. In the spaces to be occupied by the Philadelphia exhibits were large signs: "Wait for us until Monday night." The exhibit of the Maryland Motor Car Company, makers of the Maryland, the only car made outright in Baltimore, also attracted considerable attention. The machine is operated by an electric motor, and is made by the Sinclair-Scott Company.

While the auto show is holding the center of the stage, much interest was manifested in the private show of Tuesday and Wednesday at the Hotel Belvedere, where the Palmer & Singer Manufacturing Company exhibited their polished Matheson chassis that was the talk of the recent New York show. The agent in Maryland is the Matheson Automobile Company.

SPACES FOR DETROIT DECEMBER SHOW.

DETROIT, MICH., Nov. 18.—The drawing for and allotment of space in the show which is to be held under the auspices of the Detroit Auto Dealers' Association, in the big pavilion at River-view (formerly Wolf's) Park, December 9-14, took place at the office of the association Thursday evening. The Cadillac Motor Car Company was the lucky one in getting first choice of space, J. P. Schneider and Grant Brothers, drawing second and third choices respectively. Strangely enough, the Ford Motor Company and Maxwell-Briscoe-McLeod Company drew 13 and 14 respectively. Inasmuch as I. A. McLeod is chairman of the Exhibition Committee, and Mr. Pelletier, advertising manager of the Ford Motor Company, is manager of the show, the luck of these two occasioned much amusement among the other applicants.

Henry Ford has promised to uncover at his home show, for the first time, the new Ford models about which there has been much speculation in trade circles. Winton will show no less than six models, including his six in various styles of body. There will be several Maxwell and Reo models, all the Pope vehicles, Whites, and other makes.

SAN FRANCISCO NOT TO HOLD A SHOW.

SAN FRANCISCO, Nov. 10.—At a meeting of the San Francisco Automobile Dealers' Association, held last night, it was decided to abandon the proposed automobile show for the present season. Few of the dealers have been able to secure their new cars, and it was felt that an attempt to hold a show at this time would result in a poor and incomplete exhibition. The members of the association were unanimously of the opinion that it would be better to abandon the show for the season rather than postpone it indefinitely, as there was no certainty when it would be possible to secure sufficient cars to make a creditable showing. This course was adopted with but little discussion.

PHILADELPHIA'S SHOW A BIG SUCCESS.

PHILADELPHIA, Nov. 18.—Opened a week before with not a few misgivings—due in large measure to the present tight-money time—the seventh annual automobile show of the Philadelphia Automobile Trades Association came to an end last Saturday evening in a blaze of glory and with an attendance that created a new record for a record-breaking week. Not only were all local attendance figures shattered—and this despite the inclusion of two double-price nights—but the total gate receipts exceeded the previous best by many precious simoleons; sales were more plentiful, and excellent "prospects" were booked in sufficient numbers to keep agents and branch managers on the go for many a week to come in the effort to convert them from possibilities to sure things. It was, indeed, a great show.

PROVIDENCE SHOW IN FEBRUARY.

PROVIDENCE, R. I., Nov. 18.—Frank M. Prescott, who managed the previous automobile show in this city, will have charge of next year's event that is to be held from February 1 to 8 under the auspices of the Rhode Island National Guard. The new State Armory will be used, and as it has five times as much floor space as Infantry Hall, which housed the show last year, it is expected that all prior events of the kind will be totally eclipsed. It will be held in conjunction with a military carnival.

NO REDUCED RATES TO CHICAGO SHOW.

F. C. Donald, commissioner of the Central Passenger Association, Chicago, has notified the American Automobile Association and the American Motor League that there will be no reductions in railroad fares to members of those organizations attending the Chicago show, November 30 to December 7. It is understood that abuse of the privilege by the American Motor League is responsible for the declination to grant rates.

PROOF THAT AUTOMOBILE HAS COME TO STAY

FROM THE CLEVELAND PLAIN DEALER.

THE real moral to be drawn from the popularity of automobile exhibitions is the proof which it affords of the theory that the automobile has come to stay. It is not a fad, like the bicycle, roller skates and tiddle-de-winks. It is an accomplished fact. It is not the automobile but the horse that is on an unstable footing. The automobile, once the plaything of the very rich, is now utilized in numberless activities of life. It is a delivery van and an ambulance, a fire engine and an advertising dodge, a racer for the high spirited and a family hack horse for the elderly woman. Everywhere it is the "rubberneck car," and in some places it is the omnibus. It is fast losing its aristocracy,

fast becoming the most democratic of vehicles. The day is at hand when the man who drives a horse will be accused of plutocratic affectation.

Meanwhile may the automobile show live long and prosper. It has become a fixed annual affair in all cities where automobiles are commonly in use. For the automobile owner and prospective purchaser it provides an easy way for the comparison of the merits of the various makes. And for those who have no automobiles and who do not aspire to own one, the exhibitions furnish as pleasant an amusement as the horse shows, and are infinitely more instructive.

HOW THE AUTO CROSSES AFRICA.

A hazardous trip equal in daring to the Pekin-Paris tour is now being undertaken by Lieutenant Colonel Grätz of the German Army. The undertaking is made to prove the practical utility of the automobile in colonies where no railways exist.

The route starts from Dar-es-salam on the east coast of Africa and traverses the "Dark Continent" to Sawakomund on the west coast, starting and ending in German territory, but passing through Rhodesia and Bechuanaland.

Leaving Dar-es-salam the route follows the old caravan road to Tabora, which is the largest city in German East Africa; then it turns south to Bismarckburg on Lake Tanganika. This last section is considered to be probably the most difficult stretch of the trip; especially the descent to the shores of Lake Tanganika. The route then continues through Rhodesia to Karonga at the north end of Lake Victoria-Nyassa, then on rafts to Domari Bay at the south end of the lake; next it crosses a mountain chain to Fort Jameson, and thence to Miwomboshi, where it intersects the Cape to Cairo Railroad. The road from here to Bulawayo, the capital of Mozambique, is reported fairly good. Beyond it is planned to reach Palapye and then down from the high plateau to Kalahari in a desert region. This part of the route is not considered so very difficult to trace owing to the fact that Professor Passarge and several English have covered it and prepared road directions and maps. At Rieffontain the route again enters German territory, and the rest of the way to the Atlantic coast is not deemed particularly difficult.

A Gaggenau car, made in Germany, is being used. It has been specially fitted with an enormous gasoline tank.

CONCERNING THE ORMOND-DAYTONA MEET.

An arrangement has been consummated between the Florida East Coast Automobile Association and the Florida East Coast Railway interests in Florida, whereby the two will jointly conduct the annual race meet on the Ormond-Daytona beach. W. J. Morgan, who was responsible for the inauguration of the annual Florida meet, will be the general manager of the affair as usual. It had been anticipated that the Racing Board of the A. A. A. would be approached by the F. E. C. A. A. and asked to conduct the next meet on the Ormond-Daytona course. Apparently a majority of the Florida organization prefers that the meet be under its own direct control, though this action was taken by the F. E. C. A. A. previous to the conference of its representative, ex-President Asa Paine, with members of the A. A. A. Racing Board in New York City, and at a time when there was no certainty of anything being accomplished in this direction. The races will probably take place during the third week in March.

COMMITTEE FOR STOCK CHASSIS RACE.

T. F. Moore, secretary of the promoting organization of the stock chassis road race, proposed to be held in Westchester county in April next, announces the executive board and rules committee just appointed by Robert Lee Morrell, the general chairman. The list is as follows: Col. George Pope, Hartford, Conn.; Henry Ford, Detroit, Mich.; E. R. Hollander, New York City; H. A. Lozier, Plattsburgh, N. Y.; A. Massenat, New York City; C. A. Singer, New York City; James Joyce, Providence, R. I.; Paul Lacroix, New York City; Hayden Eames, Cleveland, O.; F. P. Brand, Williamsport, Pa.; Walter Allen, New York City, and F. B. Stearns, Cleveland, O. Mr. Morrell's intention is that this board, in addition to framing the rules, will decide upon the entry fee, date of the race, and take charge of the contest.

A. A. U. BARS PROFESSIONAL AUTOMOBILISTS.

At the annual meeting of the Amateur Athletic Union of America, held at the Grand Union Hotel, New York City, November 18, it was decided to refuse amateur registration to all automobilists who have raced for cash, or who have competed in races with professionals.

NOT RESPONSIBLE FOR DRIVER'S NEGLIGENCE.

PHILADELPHIA, Nov. 18.—The familiar rule of law under which the master is not responsible for injuries accruing from a servant's negligence when not engaged in the business of his employer, has been applied to the case of a chauffeur who runs down a person and kills him, while using the car unknown to the owner, by the State Superior Court of Pennsylvania, reversing a decision of the Court of Common Pleas in Philadelphia. The case was decided on the appeal of an owner whose car killed a child while being driven by his servant who had taken several of his friends riding in opposition to the wishes of his employer.

FEDERAL JURISDICTION ON CONDUIT ROAD.

ROCKVILLE, Md., Nov. 18.—In the case of J. A. Lutz, who was fined by the Glen Echo authorities for fast driving on the Conduit Road, an appeal to the higher court has just been decided by Judge Henderson, who declares that the jurisdiction of the United States over the Conduit extends to its use as a road, and that the automobile regulations of the town of Glen Echo or of Montgomery County, Maryland, are consequently of no force and effect on it. He added that the State has general jurisdiction over the road, but that it is not a public highway within the meaning of the statute.

STRANG'S SOUTHERN BARN STORMING.

Walter Christie's front-drive racer is somewhere in the South, its performances being contrary to the wishes of the owner and apparently of a somewhat unsatisfactory sort. Strang, apparently under the management of one W. H. Pickens and calling himself Louis Christie Strang, is driving the champion mile car in unsanctioned race meets, and of course it means his future disbarment from sanctioned events. From the Birmingham (Ala.) *News* comes the following "story" of a recent "meet" there:

"The automobile races at the fair grounds Tuesday afternoon proved to be a flat failure for the reason that Strang's car blew up when he had gone half a mile and because of the lack of interest in the three or four local events. A remarkable thing about the accident was the fact that the driver, Louis Christie Strang, was not hurt, as the timers claim he was going a mile in less than a minute when there was a loud report, a puff of smoke and the car came to a standstill at the half mile post. It was announced that the crank-tank burst, causing the cylinder head to blow out. The reason given for the bursting was that 94 per cent. pure gasoline was being used when 84 per cent. would have been safer.

"There was little interest in the other events on the program and few people were in the grandstand when they were over. The local owners themselves realized that enthusiasm died when the crank-tank burst and the mile event was declared off until some future time when it is said Strang will once more make a dash around what has been declared as 'the fastest mile track in the world.'"

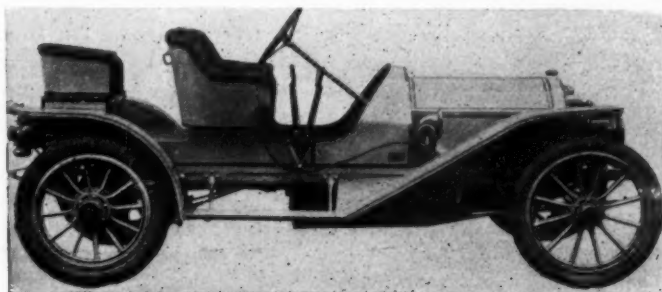
GEARLESS GREYHOUND, 75 H.P., \$4,000.

Sometimes, in even the best regulated print shops, the types get mixed, and this was the case in the November 14 advertisement of the Gearless Transmission Company, 295 Plymouth avenue, Rochester, N. Y., which concern manufactures three models as follows: "Model Seventy-five, of 75 h.p., selling at \$4,000; "Model Sixty," of 60 h.p., selling at \$3,500; and the "Greyhound," of 75 h.p., selling at \$4,000. The advertisement erroneously stated that the latter car sold for a thousand dollars less.

In the report of the very successful experiments conducted by the New York School of Automobile Engineers with alcohol, it was erroneously stated in the last issue of THE AUTOMOBILE that the fuel employed consisted of alcohol with 10 per cent. of benzene and 2 per cent. of wood alcohol. The U. S. Industrial Alcohol Company, who supplied the fuel, inform us that it is composed of 90 per cent. of 188 degree proof grain alcohol, 10 per cent. of wood alcohol and 1-2 per cent. of benzol.

HOL-TAN COMPANY TO MARKET AMERICAN CAR.

Since relinquishing the Fiat agency, developments in the metropolitan representation of American cars have been looked for on the part of the Hol-Tan Company, of which C. H. Tangeman is president and Harry Fosdick, vice-president, and the announcement that this concern had just concluded negotiations for the building of a special American car to be marketed under the name of Hol-Tan is of considerable interest. The new car is to be built by the Moon Motor Car Company, St. Louis, Mo., of which L. P. Mooers, originally with the Peerless Company, is the designer. It is intended to follow foreign practice to a certain extent in marketing the cars, the bodies being supplied by Locke, Quinby and



HOL-TAN STANDARD MODEL WITH THREE-PASSENGER BODY.

Demarest, in many cases, to the purchaser's order. Two models will be offered at first, the smaller of which will be known as the Hol-Tan Standard, while the larger car is the Hol-Tan Special, the chief points of difference being in the length of the wheelbase, size of the wheels and chassis length. Both will be equipped with the Moon 41-2 by 41-2-inch, four-cylinder water-cooled motor, fitted with dual ignition employing the Eisemann high-tension magneto and a standard coil and accumulator system. The car will be known as a 25-horsepower model, though ever the conservative A. L. A. M. rating gives it 32 horsepower. The gear-set provides four speeds forward and operates on the selective plan, final drive being by shaft. With a touring body and full equipment, the weight of the Standard model with its 110-inch wheelbase, is 2,500 pounds, and it is listed at \$3,000. It will also be fitted as a two, three or four-passenger roadster, but no bodies will be built to order for this chassis. The Special type has a 121-inch wheelbase, permitting the use of a five-passenger tonneau, or of the fitting of a limousine or landaulet type of body. Chassis only lists at \$2,750, and at \$3,750 with touring body.

ONE MAN'S OPINION ON MAGNETO IGNITION.

Designer Sam Hartley, of the Cleveland Motor Car Company, sets forth the merits of magneto ignition as follows:

"We believe that the gasoline car should be independent of outside necessities so far as possible and that, given fuel and oil, there should not be a further expense to the user, but that by the mechanical generation of electricity the ignition problem should be made reliable, durable and without further expense to the buyer for batteries or for charging storage cells, which may be exhausted at inopportune times, as well as being some considerable expense to replace or recharge. Further than this, the magneto gives a better spark than the usual battery, because it is not considered advisable to carry a sufficient weight of battery to produce a spark larger than actually necessary, although it is well recognized that an increased spark size results in increased power and therefore is really economical in the saving of fuel. This as well affords greater satisfaction in the vehicle, as greater flexibility arises from the increased motor power given by the large spark.

"We prefer the gear-driven magneto, because this produces the electric impulse just when wanted and therefore of greater size than the direct current, friction-driven magnetos frequently used, although these latter are quite satisfactory. As an adjunct and a reserve against any possibility of trouble, we provide a set of batteries, but since these are seldom used, we avoid the expense connected with them. The rapid growth of the use of the magneto is evidence of this great value and is simply another pointer that automobile makers are sparing no expense to give their users the most reliable and economical constructions possible to build."

RUNABOUTS NOW A BUSINESS NECESSITY.

INDIANAPOLIS, IND., Nov. 12.—There will be a large number of changes in Indiana automobile agencies next season. Probably the most important change will be in the State agency of the Marmon, which has been held for the last two seasons by the Gibson Automobile Company. This will be held in 1908 by the H. T. Hearsy Vehicle Company, who have added the Marion in addition to their old agencies, consisting of the White, Rambler, and Pope-Waverly.

There are a number of companies seeking representatives in the city that have not been represented in the past. It is believed that the auto buggy manufacturers, which are without representatives in the city, with one exception, will make a strong effort to get business here next year.

The 1907 season has been much larger than that of last year. More and higher priced cars have been sold. There has been a great demand for runabouts, chiefly among physicians and city and traveling salesmen. Men buying automobiles for pleasure have, with few exceptions, purchased three-passenger roadsters or touring cars.

It is safe to estimate that from 1,300 to 1,500 automobiles have been sold in Indianapolis this season. Indications for next year are good, and many orders for March, April and May delivery are already filed. Preference has been shown to a large extent for six-cylinder cars and the popular roadsters for next year. However, there is no fear but that four-cylinder touring cars and the runabouts will retain their popularity.

"Runabouts," said a prominent local dealer, "are like the bicycle. They have grown from a pleasure vehicle to a business necessity and now constitute something that many business men in certain lines find that they cannot well afford to do without."

FIRE IN LEATHER TIRE GOODS CO.'S PLANT.

BOSTON, Nov. 18.—Fire which started in the plant of the Leather Tire Goods Company at Newton Upper Falls, a suburb of this city, on Thursday last, did a limited amount of damage. The concern manufactures the patent Woodworth detachable steel-studded leather treads for protecting pneumatic tires. No serious interruption to business was caused.



E. J. MOON IN CAR OF THE SAME NAME.



NORTH SIDE GARAGE, CHICAGO'S NEWEST ARTISTIC TYPE.

Latest Addition to Chicago's Garage List.

CHICAGO, Nov. 18.—Among the influences that are tending to improve Chicago architecturally, not the least important is that of the new garages which are being erected in all parts of the city. A representative instance of this is to be found in the establishment of Joseph Paupa, Jr., known as the North Side Garage, and which is located at 605-607 North Clark street. Some idea of the pleasing facade of the building may be obtained from the accompanying photograph. The building is of fireproof construction, and the garage space, which measures 50 by 155 feet, is entirely clear of supporting pillars. The remainder of the building is devoted to an accessory supply store, measuring 20 by 50 feet, a chauffeurs' reading room and a waiting room. The building is electrically lighted and steam heated, and includes in its facilities a charging plant capable of taking care of twelve electric cars at once. This is as finely equipped a garage as is to be found anywhere in Chicago.

New York State's Garage List Growing Fast.

AUBURN, N. Y., Nov. 18.—A notable addition to the list of up-to-date New York garages was made with the opening of the establishment of the Auburn Automobile Company this summer. This concern, of which George H. Leonard is the proprietor and manager, has had an 80 by 60 one-story building especially erected for the purpose. It is of brick and concrete construction and is fitted with offices and salesroom, chauffeurs' locker room and ladies' waiting room at one end and a complete repair shop at the other. One corner is devoted to charging and caring for electrics and storage batteries. This year the Auburn Automobile Company has handled the Franklin, Buick and the Pope-Waverley electrics and has done an excellent business with all three.

Model Garage Opened in Bridgeport.

BRIDGEPORT, CONN., Nov. 18.—The New York to Boston route is becoming famous for its garages and a notable addition to the chain is to be found in the recently opened Blue Ribbon garage on Fairfield avenue, Bridgeport. The building is three stories in height and is of steel and concrete from cellar to roof, even the latter being of concrete. In fact, there is a testing station for cars on top of it. The freight elevator runs the height of the building, accommodating the largest cars, and is to be extended to the roof. Among the conveniences are a ladies' waiting room, chauffeurs' room and every facility for handling cars.

NEW DOINGS AMONG THE GARAGES.

Spencerville, O.—H. A. Mack, the pioneer auto dealer in this section, has had erected for him a modern garage building, on the site of his former establishment, on East Market

street. It is two stories high and measures 50x100 feet; of fireproof construction throughout, and is equipped with every facility for handling and repairing cars.

Omaha, Neb.—The Powell Automobile Company has gone out of the garage business and will in future devote its entire attention to the handling of a general line of accessories and supplies. The company's location will be at 2010 Farnam street. Several men will be put on the road this fall, and a much larger territory covered than previously.

San Mateo, Cal.—Before the end of the year the garage facilities of this town will have two notable additions in the shape of the new garage of Brown Brothers, at B street and Fourth avenue, now in operation, and the \$25,000 garage building of the Pope estate, being erected at Third avenue and El Camino Real, which is expected to be finished in December.

Madison, Wis.—The model establishment on which the Hokanson Automobile Company began construction last summer is now about completed. It is located nearly opposite the old place, on East Doty street, and consists of a one-story and basement structure measuring 77x132 feet. It is of brick construction, with very few posts on the floor, and has been erected at a cost of \$10,000.

Savannah, Ga.—Thompson & Company, who carried on a general business, with salesrooms at Bull and Jones streets, have been succeeded by the Wilson Automobile Company, which has established quarters at 349 Bull street, where they have fitted up a place to take care of repairing and storing as well as selling cars. Renting will also be a feature of the business. Thompson & Company became bankrupt, and the Wilson Automobile Company is nominally its successor.

Charleston, S. C.—This city can boast of one of the largest automobile livery services in the entire South. It is known as the Charleston Hotel and Auto Livery Company, and during the past summer has moved into a new and commodious garage just opposite the hotel on Haynes street. It is a four-story brick building, the interior of which has been remodeled especially for this purpose. The company now has in operation three transfer buses, a sight-seeing car of large capacity and eight touring cars for rental purposes, the different cars being Mitchells, Ramblers and Reos.

Detroit.—Under the title of the Joseph Chene Auto Garage Company, Detroit acquired a notable addition to its already long list of automobile dealers, and the new firm has had erected for it a building quite in keeping with its importance in the trade. It is located at 1086-1090 Jefferson avenue, and is one of the most completely equipped in Detroit. The firm consists of Joseph Chene, an expert machinist, who has been with the Olds, Cadillac, Northern and Standard Automobile companies, and Bert Allen, an associate of Mr. Chene's in the repair department of the Standard Company. It will be evident from this that the new firm will make a specialty of repairing.



INTERIOR OF THE GARAGE OF THE AUBURN AUTOMOBILE CO.] 1



THERE is less actual business in automobile shows for accessory people than for car makers, yet the parts and supply men feel obliged to go into every show. Concerning this, H. T. Dunn, president of the Fisk Rubber Company, says: "It would be a waste of time for the tiremakers to go to a show seeking wholesale business. We have an organization for that trade. As to retail business, tires are not an accessory that a man buys and orders sent home, as a rule. About all we can hope to do is some advertising and missionary work. In our own case this is eminently satisfactory. The presence of all the different grades of tires at the shows gives men who really want to know a chance to make comparisons which otherwise are difficult, and this is the best thing for any exclusive class of goods such as Fisk tires. Going from one stand to another nearby, it is possible for a man to learn what there is about tires that warrants the Fisk being a little higher in price. A field for educational work is chiefly what the shows offer the makers of tires.

With the increase in Lozier agencies, due to the campaign which the Lozier Company is making for wholesale business, the territory has been separated into two divisions, eastern and western, the former in charge of W. S. M. Mead, and the latter under the direction of F. C. Chandler. The retail sales department of the metropolitan district will be in charge of C. A. Emise. Mr. Chandler, for a number of years manager of the Hamburg branch of the Lozier Company, will also have charge of the foreign sales department, and as this firm has previously done a large export business in bicycles and marine motors, this places them in an excellent position to enter the foreign market with their cars.

Interest in the taxicab development in New York is revealed by the recent incorporation of two companies to undertake this business. One is the National Taxicab Company, organized by W. Bernard Vanse, Brooklyn; George A. Knoblich, New York, and Woodford Mobry, New York, with a capital of \$25,000, while the other is the Manhattan Taximeter Company, having a capital of \$5,000, of which Cecil P. and Arthur A. Stewart, and Arthur Kleve, all of New York, are the incorporators.

One million two hundred and fifty thousand tires is the total output to date of the great French house of Michelin. This is sufficient to equip 300,000 cars or a greater number than the total registration of automobiles in this country. Last year Michelin

did a \$11,000,000 business, including that of his English and Italian factories. Now that the big Michelin plant at Milltown, N. J., is in full operation, the output and consumption of these tires will be materially increased.

This item is from the Mobile, Ala., *Herald*: "There is a noticeable increase in the size of the automobiles to be seen on the streets in the city within the last few months. A year ago a large touring car was the exception, whereas now there are any number of goodly sized machines to be seen daily on the streets. One of the most recently purchased machines in the city is the largest ever owned by a Mobilian."

RECENT BUSINESS CHANGES.

The Frederick E. Randall Company, Boston, Mass., representing the Pullman and Pennsylvania interests in that city, have been reorganized owing to the death of the late Frederick E. Randall. Milber Dykeman is now president, Mrs. N. C. Randall, treasurer, and H. F. Cross, secretary. Charles Bates continues as general manager—in fact, the only new officer of the company is Mr. Dykeman.

The Oldsmobile Company of Canada has just moved into its new offices and salesrooms, located at 80 King street, East, Toronto, Ont. An up-to-date garage and completely equipped repair shop having all modern facilities is conducted for the convenience of Oldsmobile owners in that section of the Dominion.

NEW AGENCIES ESTABLISHED.

The Studebaker Brothers Company has just opened a branch in Philadelphia, where a complete line of their gasoline and electric pleasure vehicles and trucks will be handled. The new branch will be in charge of A. J. King as manager and Frank Yerger as assistant. Mr. King was formerly connected with the Keystone Automobile Company, while Mr. Yerger was with Titman, Leeds & Company, the former Studebaker agents. The location of the new branch headquarters will be announced in the near future.

The John N. Loeser Manufacturing Company will continue to push the cars of the Logan Construction Company, Chillicothe, O., in the New York metropolitan district during the coming year. They have added a complete line of the Logan commercial vehicles for demonstrating purposes and

expect to do a largely increased business with this end during 1908.

The Pope agencies in Chicago have just been divided, Orlando F. Weber retaining the representation of the Pope-Toledo, while George F. Kehew takes the Pope-Hartford interests in that territory. Mr. Kehew started with the Columbia people at Hartford some time ago, but has handled the Moon and Queen cars in the interim.

The Glide interests for the South during the coming year have been taken over by J. S. Russell, who has taken the agency for the Southern States. Headquarters have been fitted up at 327 Baronne street, New Orleans, La., from which point agents will be appointed.

IMPERIAL IN PHILADELPHIA.

PHILADELPHIA, Nov. 18.—Show week as usual furnished its usual quota of trade sensations along "Gasoline Row." One of the most startling was the announcement that the Bergdoll Bros. have secured the local selling rights for the Imperial line. Just now the Bergdolls are rushing work on their big establishment at Broad and Wood streets, where they hope to install their full line—they will also handle the Welch and Benz cars—by the first of the year. Meantime they are carrying on business at 310 North Broad street. Joseph L. Keir, local Renault agent, has been secured as manager.

PERSONAL TRADE MENTION.

E. C. Morse, who has been connected with the sales department of the National Cash Register Company, Dayton, O., for the past eight years, has been appointed to the new office of "commercial manager" of the E. R. Thomas Motor Company, Buffalo, N. Y. He will have full charge of all matters pertaining to the advertising and sale of the Thomas cars, his past experience in what is generally conceded to be one of the world's best schools for salesmen fitting him well for his new position.

W. M. Botto, general sales agent for the Matheson Motor Car Company, is making the rounds of the local shows and exhibiting the 1908 chassis at the principal hotels. In Baltimore he is making his headquarters at the Belvedere; in Washington he will show at the New Willard; in Pittsburgh at the Schenley, and in Cincinnati at the Sinton. After the shows he will take the chassis to New Mexico.

E. P. Nussbaum, for many years general manager of the National Electric Supply

Company, Washington, D. C., and who, in the past few years, has been handling the well-known Harris oils, has just severed his connection with the Harris Oil Company to become a special sales representative of the Jones Speedometer Company, Broadway and Seventy-sixth street, New York City.

C. S. Henshaw, of the Henshaw Motor Car Company, 97 Massachusetts avenue, Boston, Mass., who handle the Oldsmobile and Columbus electrics in that territory, has announced that he will sever his connections with the firm in the near future and is open for negotiations with any large concern, New England territory with Boston headquarters being preferred.

Rene Beauchemin, formerly with the Lozier Motor Company, has again taken up the sale of Lozier cars, but for H. C. & C. D. Castle, Inc., who handle this line in the New England territory. He will make his headquarters at Boston.

H. H. Everett, a well known writer on automobile topics, connected in the past with *Outing*, *Collier's*, *Motor* and the *Cosmopolitan Magazine*, is now associated with A. B. Tucker in his well-conducted bureau of automobile publicity.

Burton Parker, formerly of the Hartford Rubber Works Company and later with the Fisk Rubber Company, has joined the Michelin Tire Company and will be located at the general offices in Milltown, N. J.

Frank E. Clark, formerly of the Western Tool Works, Galesburg, Ill., has been appointed purchasing agent for the American Motor Car Company, Indianapolis, Ind.

THE BANKRUPTCY LIST.

CHARLOTTE, MICH., Nov. 18.—A voluntary petition in bankruptcy has been filed in the United States Circuit Court at Grand Rapids by the Dolson Automobile Company of this city. Three Chicago creditors with claims aggregating \$1,000 are responsible for the filing of the petition. The book value of the assets reaches \$250,000, with unsecured claims of \$140,000. C. R. Hathaway of the Muncie Auto Parts Company, Muncie, Ind., has been appointed custodian of the plant, pending the naming of a trustee.

NEW YORK, Nov. 20.—John Gruenberg has been appointed receiver for the Duplex Ignition Company, manufacturers of spark-plugs and auto supplies, 307 West Thirty-sixth street, a petition in bankruptcy having been filed by Fritz Lowenstein, with a claim of \$1,075; W. T. Hoofnagle, \$259, and the Telephone Manufacturing Company, \$250.

NEW YORK, Nov. 20.—A petition in bankruptcy has been filed against the Kalb & Berger Manufacturing Company, 530 East Seventy-second street, maker of transmission gears, and other specialties, by the following creditors: D. S. Holcomb, \$700; Eaton, Schleich & Wall, \$49, and W. F. Dunker, \$425. Charles Weiser was appointed receiver.

FRANKLIN CO.'S SELLING PLAN.

Important changes in the selling organization of the H. H. Franklin Mfg. Co. have just been announced from Syracuse. The entire selling division which heretofore has been under the supervision of Mr. Franklin himself has been turned over to V. E. Minich, who has just been appointed assistant to the president.

Mr. Minich was formerly general manager of the Haynes Automobile Company of Kokomo, Ind. More recently he has occupied the position as advertising manager for the National Cash Register Company of Dayton, O. As director of the selling division of the Franklin Company, Mr. Minich will have under him the sales, sundry, and advertising departments, and the branches of the Franklin Automobile Company. F. R. Bump will continue as sales manager and J. G. Barker as manager of the sundry department.

Charles M. Steele, a former Chicago newspaper man, has been appointed advertising manager. Mr. Steele was until recently at the head of the publicity department of the National Cash Register Company, of Dayton, O.

The three branches of the Franklin Automobile Company at New York, Boston and Chicago are in charge of W. S. Jewell, C. E. Wheeler and F. L. Thomas, respectively. Frank G. Carrie, formerly New York representative for the Haynes Co., has been appointed assistant manager of the Franklin Automobile Company's branch in New York.

NEW TRADE PUBLICATIONS.

Soberly printed in black and gray, embellished only by a colored frontispiece, the Packard 1908 catalogue has a very distinctive appearance. Line drawings only illustrate the mechanical features of the 1908 output of the Detroit concern, and the word story does not err on the score of verbosity; it is sufficiently lengthy, however, to adequately cover all the distinctive features of Packard construction and to make known the improvements in detail over the model of the previous year.

In a business-like manner the Hatfield buggyabout for 1908 is presented to the public in a well-produced sixteen-page catalogue. The vehicle is driven by a double opposed air-cooled engine and has a number of features above the usual run of buggyabouts, all of which are clearly set forth in the publication. Its makers are the Hatfield Motor Vehicle Company, Miamisburg, O.

A very clear understanding of the structural features of the Holley carburetor can be obtained by a perusal of a booklet issued by the Holley Brothers Company, of Detroit, Mich. Sectional drawings and very explicit text matter make possible an appreciation of the features of the Holley in a manner which will be appreciated by the professional and the amateur.

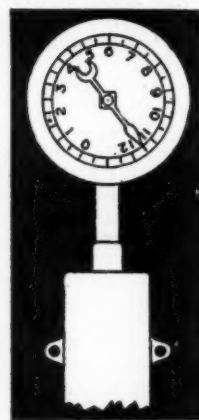
The Kiblinger, an automobile haling from Auburn, Ind., where it is manufactured by the W. H. Kiblinger Company, has its virtues extolled in a catalogue just sent broadcast from headquarters. A romance is woven around the Kiblinger for those interested in romantic stories, and there are plenty of illustrations and descriptions for the technically inclined.

Details of the 1908 Mason automobile, built by the Mason Motor Car Company, Des Moines, Ia., are contained in the firm's new illustrated catalogue. The machine is a two-cylinder horizontal opposed, with single chain drive. Its features are well presented in the catalogue.

Frontenac touring cars and runabouts are presented to the public in an illustrated booklet of pleasing appearance, issued by the Abendroth & Root Manufacturing Company, of Newburg-on-the-Hudson, N. Y.

INFORMATION FOR AUTO USERS.

The Hans Gasoline Gauge.—It goes without saying that if every car were equipped with a gasoline gauge on the dash, there would be less need for an emergency fuel tank and fewer instances of being caught on the road with an empty tank. The Edmund E. Hans Company, Minneapolis, Minn., has brought out a gauge for this purpose, which consists of a float chamber of rectangular section, of approximately the same height as the depth of the gasoline tank and which is surmounted by an indicating pointer and dial, somewhat similar to a steam gauge in appearance. The indicating mechanism is composed of two pinions and a drum and is connected with the float by means of a cable of special braided silk, which is entirely unaffected by the action of gasoline and will last indefinitely. The apparatus can be used with any style of tank and whether operated by gravity or pressure, an important feature being

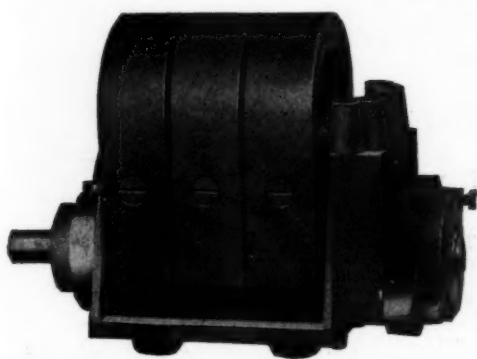


HANS GASOLINE GAUGE.

the fact that the indicating needle is not affected by the jolting or vibration of the car. The construction is of the simplest and all the parts are very substantial, so that the makers give an unconditional guarantee with the instrument. It can be used to equal advantage whether the tank happens to be hung under the frame at the rear, is placed under the seat or under the bonnet, and is made in special form for use on steam cars. The necessary connections are simple and easily made.

Motor and Parts Specialists.—The Michigan Automobile Company, Ltd., Kalamazoo, Mich., having discontinued the building of complete cars, is devoting its entire attention to the manufacture of motors, gear-sets and other machined parts in large quantities, being engaged at present in turning out one order for gear-sets which aggregates \$50,000. This concern manufactures all types of motors from one to six-cylinders and all styles of gear-sets from blue-prints, being specially equipped to produce this class of work in large quantities for prompt delivery. It is also in a position to do other machine work connected with automobile manufacture, such as cylinder-grinding, and is now installing a number of modern machine tools of the best types, which will make its facilities unequalled for the production of work of this special character. The members of the firm have had five years' experience in this particular line, following upon a number of years in other lines of machine shop practice.

New Remy Magneto.—As an entirely new comer for their 1908 line, the Remy Electric Company, Anderson, Ind., have brought out a high-tension magneto. This is styled the Type F, and is claimed to be the most simple jump-spark ignition equipment ever devised for a four-cylinder engine. No independent coil is employed and the magneto can be installed on a car with a minimum of expense. It is also adapt-



REMY TYPE F MAGNETO.

ed for use with single and twin-cylinder engines, the complete wiring in any case consisting of but a single connection between each spark-plug and the magneto, with a primary wire to the switch for shutting off the generator when stopping. This new magneto is of the true high-tension type, in that it has both the primary and secondary windings placed directly on the armature, but unlike most others, it employs no gearing or distributor. It is intended to run at the same speed as the motor crankshaft, and as the armature moves from a position with its core parallel with the fields, the primary circuit is mechanically broken and a high-tension current induced in the secondary winding of the armature, this being conducted through brushes and a simple arrangement of segments on a hard-rubber drum to the cables leading to the plugs. The point at which the primary circuit is broken may be advanced or retarded to an extent equivalent to 30 degrees on the circle of armature rotation, which gives ample leeway for altering the timing of the spark. The construction throughout is of the most durable nature and the magneto is both dust and waterproof, the only attention required being an occasional oiling. Some idea of the extreme simplicity of the new Remy may be obtained from the illustration.

Improved Barrett Auto Jacks.—For the season of 1908 "The Jack That Builds," otherwise known as the Barrett jack, and made by the Barrett Manufactur-



IMPROVED BARRETT JACK.

ing Company, Pittsburg, Pa., has been improved by the addition of a new reversing lever which controls the movement of the jack, up or down. Working at the

front of the jack and displacing the side eccentric or thumbscrew formerly used, the reversing lever is always accessible, no matter in what position the jack may be placed under the car. And it is in ready reach without groping between the spokes of the wheel or crawling beneath the car. It is not even necessary to reach under the car to operate the lever, as a slight blow with the jack handle will set it as desired in a second. This ingenious device adds greatly to the efficiency and convenience of the Barrett jack, on which it is an exclusive feature, patents covering it now being pending.

National Carbureter.—Under the title of the "National," the National Auto Accessory Company, 84 State street, Boston, Mass., are just placing on the market a new carbureter which is claimed to embody numerous features of merit, and on which patents have been applied for. It is adapted to run with alcohol as well as with gasoline and one of its chief features of distinction consists of a non-seating air-valve that not only makes it noiseless, but sprays the incoming air around the gas-



NATIONAL SILENT VALVE CARBURETER.

oline nozzle in such a manner as to thoroughly mix it with the gasoline, completely vaporizing the latter. Its makers claim this construction makes it particularly adaptable to two-cycle motors of the three-port type, though it is equally well adapted to both two and four-cycle motors, and is intended for both automobile and motor-boat service. It is constructed of brass throughout with the exception of the float, and is made in standard pipe sizes.

The Phelps Vehicle Recorder.—This is a device which automatically records the movements of all kinds of vehicles, and has been constructed to meet the requirements of team and vehicle owners and operators, livery stables, cab companies, automobiles, motor trucks and the like. The entire apparatus is enclosed in a locked aluminum case, its record, which covers seven consecutive days, being made on sensitized dials, but the instrument differs radically from all other devices of this character, in that it requires no connection with the wheels or other moving part of the vehicle, and may be mounted in any convenient location in the body or top of the vehicle away from contact with passengers or merchandise. Moreover, it is unbeatable, as it cannot be opened without leaving a

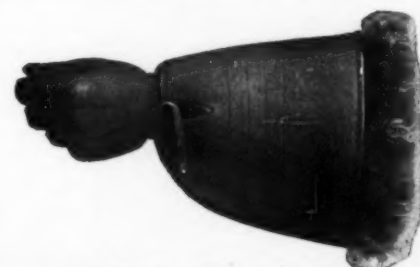
record of that fact on the dial. The latter is printed on a hard surface paper with blue sensitizing, upon which a white record is made of an entire week, day and night. The clock movements used are twelve-day, nine-jeweled Seth Thomas, with compensating balance, and are not only accurate timekeepers, but are constructed to withstand the hardest kind of service without



PHELPS VEHICLE RECORDER.

derangement. It shows the number of stops, the time of starting, elapsed time of every stop and elapsed time between each start and stop, as well as time of night or day that the vehicle was in operation beside the time of return to garage and a complete record of movement during the night, if any, thus putting an effective stop on "joy riding." The entire mechanism is under lock and key and cannot be tampered with without detection, nor in any other way put out of service. The instruments are sold outright with a year's supply of dials and are handled exclusively by William S. Jones, 112 North Broad street, Philadelphia, or 101 West Sixty-sixth street, New York City.

Grinnell "Rist-Fit" Gloves.—Comfortable gloves are essential for the driver's peace of mind, and just what constitutes comfort in this respect has been made a study by the makers of the Grinnell "Rist-Fit" gloves, Morrison, MacIntosh & Company, Grinnell, Ia. As their name indi-



GRINNELL "RIST-FIT" GLOVE.

cates, these gloves fit snugly about the wrist, which is accomplished by providing a strap at that point, a slight pull on which draws the glove closely about the wrist, holding them neatly and securely in place, with the cuffs well up, thus keeping out snow and cold winds. The gloves themselves are made of soft, pliable "reindeer" and colt-skin leathers, which are claimed to possess exceptional wearing qualities and are not injured by either heat or wetting.

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Flatiron Building,

NEW YORK

Nov. 21, 1907.

